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*Report on the Island of Chedooba.*—BY EDWARD P. HALSTED, ESQ.  
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(Continued from page 377.)

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### DIVISION V.

#### *Manners and Customs, Education, Language, and Religion.*

The population of Chedooba is, with few, and trifling exceptions, entirely Mug, and from their isolated position, its inhabitants afford perhaps a truer exhibition of the character of these people than their brethren of the main land, or of Ramree, whose intercourse with their fellow subjects of different parts of the Peninsula, has by no means been attended with benefit to their original and national character. The Mugs of Chedooba, are a simple, moral, and inoffensive race, of frank open manner, cheerful, and forgiving disposition ; exhibiting much independence of feeling, the consequence of a thorough contentment with their lot ; respectful to their superiors, though perfect strangers to the crouching servility of the Hindoo ; throughout their character, exhibiting those traits, which are most readily appreciated, and admired by ourselves, some which might even be copied with advantage, and which, if duly fostered and encouraged, offer with his freedom from all the obstacles of caste a ground work whereon to elevate the Mug high, if not the highest, in all the benefits of European civilization of all the natives of the East, subjected to our rule, from whom in almost every point of character, as in appearance he differs most widely ; in the last particular less to his advantage, than in the

former, as his features proclaim him a Tartar, and are but rarely found modified with the more regular ones of the people on whose border he has so long inhabited.

The only custom among them, (other than the idolatrous ones of their worship of Gaudma) which appear at all repugnant to our own feelings, is that of a plurality of wives, which is permitted; but is a permission seldom taken an advantage of, especially in Chedooba.

The most notorious case met with, was in that of the Soogree of Mengbieng; a fine intelligent man of 45 with 3 wives, and a family of 18 children, from 24 years old to 6 months, all living in the most perfect harmony and peace under the same roof. Although in every respect *bona fide* wives, yet the two younger observed a dutiful attention and submission to the first and eldest, who was considered as the governess of the household, the others in regard to her, conducting themselves more as daughters. It was a curious and not uninteresting family scene, and I spent near two hours with them, enquiring, without the slightest offence to husband, wives, or children, into the peculiarities, and relative duties, and stations of a style of family partnership I had never before witnessed so extensively, and was answered with the greatest frankness and good nature, our remarks often causing a general laugh. The elder wife had supplied her share of the family circle, not so the two younger, and at least in this case, polygamy does not threaten a cause of depopulation to Chedooba.

Marriage is merely a civil contract unmixed with any religious ceremony or sanction, and is the result of mutual preference, as well as of the interposition of friends and parents. Those of the would be bridegroom proceed with fruits, flowers, wearing apparel, and ornaments to the parents of the bride, and seek her formally in marriage. If granted, the presents are left for the bride, to whose house the bridegroom proceeds in the evening, and where he resides and serves his father-in-law, not as a servant, but as a partner or a son for an indefinite period.

As with mutual consent the ceremony is performed, so with the same is it annulled, and though this privilege is not unfrequently acted on in the more populous towns of Ramree, and the Main, yet it is merely so in Chedooba, and three cases came under observation, where, although separation took place on the side of one of the parties, the other denied all acquiescence in the transaction, and with the community in general esteemed it a desertion. One was an interesting case, arising from the conversion of the husband to Christianity; to all attempts at reconciliation on the part of himself and others, an obstinate denial was

returned by the wife, while he persisted on his part, on keeping and educating his children, two sons.

On Flat Island, the Soogree and his dame, had been man and wife upwards of half a century. They were both verging towards 80 years of age, and their direct progeny on the Island, with themselves, amounted to 50 souls.

In the case of mutual consent, both parties are at liberty to form a new connexion, and there are no such matters as family names, whereby such intermixture of families may be perceived. Not the slightest relation exists between the names of children and parents. All appellations have a meaning, the males generally of some enviable moral or personal quality, or happy anticipation of the future. The females of some tree or flavour, or feminine Mug grace.

Marriage generally takes place early in life; as soon as marriageable, the females assume a particular dress, a species of jacket, which is changed on that happy event to a larger covering over the upper parts of the body. The lower garment, both before and after entering on that state, admitting perhaps of improvement on the score of ampleness; on widowhood, the maiden dress is again assumed. An ample cloth around the middle, and a fellow one, thrown over the shoulders when cold, constitute the covering of the younger males, who as bachelors live in a distinct part of the village. The elders wear a white jacket shorter or longer; an article of this sort, made of dark coloured glazed cotton, slightly padded with the same material is frequently used by the elder males in the cold or fine season, and is brought from Ava, which also supplies a gaudy silk cloth of curiously interwoven colors, but coarse workmanship, which is used as a waist cloth on high occasions by all who can afford it. The common cloth is a cotton plaid of blue shades, and of home manufacture. A finer cloth or turban of white is used by the men, and interwoven with the hair, which, in both sexes, is of a beautiful glossy black, and great length and luxuriance, it occasions with both the only labour of the toilette, and they are very proud of this natural ornament. With the females, it is simply formed into a roll or knot at the back of the head, being parted for that purpose in front, and brought along the side of the head in a manner not uncommon in England; much good taste is sometimes displayed by the simple addition, as ornament, of some favourite flowers. Children of both sexes are frequently ornamented with silver rings on the wrists and ancles, and a string of silver coins around the neck; these are usually heir looms in a family, and in turn, grace all the young olive branches as they shoot forth.

Infants are slightly, if at all clad, and there is no custom among these people tending to produce any deformity of limbs, which from the birth are allowed free developement, nor is any care taken to prevent exposure to either sun or rain. Infants are seen in the houses of all the villages crawling about alone, and as soon as old enough to get down the, so called, stairs of the raised floors, they are to be found in groups amusing themselves without any controul, and naked as when born. The girls clothe when 5 or 6, the boys seldom submit to the restraint till 8 or 9 years old. This freedom enables them to exhibit in youth well made persons, tends to much personal activity, and inures them to subsequent exposure, without any fear of ill consequences. The government of their children is mild and affectionate, and is repaid by duty and attention in after life, and there is little evidence to be derived from their noise of crying, of the number of children who flourish in a Cheedooba Village.

Though well proportioned, and exhibiting a good share of muscle, especially on the lower limbs, they are a small people, and of moderate stature, the tallest among them not attaining a height of 5 feet 10 inches; 5 feet 4 or 5 inches may be the average; the females less.

Though with decided Tarter features, all search for any thing approaching to what constitutes in our ideas, beauty, must be in vain, yet there is an open expression of frankness and good humour, in the countenances of many of both sexes, and very commonly so in age, which with us must be allowed to pass in its stead, and among themselves constitutes that envied distinction. But truth compels to the avowal that this is found oftener with the males than females. The colour of the skin is not a black but that of a mulattoe.

Of ornament, when grown up, neither sex have any; but a practice designed for such purpose in all other countries, is here transferred into one of every day usefulness; with both, the lobe of the ear is perforated, and the large hole fully occupied with the ever accompanying cigar. A roll of paper fills its place, when not present, in order that the capacity of this natural cigar case may not be diminished by contraction; where it can be afforded, silver is used instead of paper, and sometimes the white pith of a particular wood is used. When about to make a journey, the dimensions of the cigar are greatly increased, and it is then as thick as the fore-finger, and from a foot to 15 inches in length; a party on the road with both ears thus mounted, looks not a little singular. Neither the practice of smoking, nor the method of carrying the cigar is confined to the men, and from infancy both sexes are accustomed to the indulgence;

but as before noted it is of a most mild quality, and made principally from a leaf found in a jungle, with but little tobacco. It is the only one of an excitable nature in use, if indeed the mild mixture they smoke, is so at all. The only beverage is water, and though the licensing of shops for liquor and opium, is, in the more populous towns of Ramree, and the mainland, gradually tending to deprive their neighbours and countrymen of those parts, of the invaluable inheritance of national sobriety, Chedooba is as yet clear of the infection.

The acquirements of education are the result of the labours of the priesthood, who thus repay the maintenance allotted them by the public. All classes receive a like attention, the extent of which goes to the learning to read and write; of this benefit however, the children alone of the more populous villages of Chedooba principally partake, they alone being large enough to maintain continually an establishment of the sort, though every village has attached to it, a Riong or Church, and a School room, to which occasional visits are paid by itinerant priests. Spinning cotton, and the use of the loom are branches of domestic education, learnt by the females at home; while as soon as he is old enough to bear its weight, the boy sallies forth with his parent, and his dâh, to assist in clearing the jungle for cultivation, or in felling it for fuel.

The skill in the use of this weapon, thus learnt, is very great; in shape it resembles our bill-hook, with the sharp edge along the outer or convex side, but it is without the crook, longer and heavier, the largest in this latter particular fully equalling that of one of our own axes, with a blade nearly two feet long, and about 4 inches in width. With this weapon, the ease and rapidity with which the largest trees are felled is very great, and the Mug is perhaps as dexterous a woodsman as the Kentucky man himself; the facility with which acres of large trees were felled on the hill tops, to clear them for Theodolite observation, gave ample opportunity to note and appreciate his ability in this point, as from it was reaped a most valuable and correct means of effecting a survey, which without it would have been greatly increased in labour and sources of error, as well as occupation of time.

The tree is not felled so low down as with the axe, but breast high, which raises an objection to felling with it for timber, though not in mere clearing for cultivation. Every man in the Island has his dâh, which is his constant companion, and is in constant use, to fell his timber, to make his cart, his house, his canoe, his baskets for fishing or other purposes, and last not least to chop up his curry. A Mug without a dâh might as well be without a right hand.

In felling trees of very large diameter, an axe is made use of, it is a sort of thick chisel, with about a two inch blade, inserted into a handle knobbed at the end for its reception, where it is further secured by a seizing of rattan. This is a formidable weapon in a Mug's hand, and he fells his tree with it quickly and clean.

With a disposition greatly averse to any continued or fixed labour. the Mug yet is always on the move, either at work, or half amusement with his dâh in the jungles, or wandering through them from village to village; this constant out door exercise and use of limb, gives a suppleness, and developement of muscle to their legs and thighs particularly, which constitute him an untiring walker, and is very perceptible even in very old age, rendering him to the last independent of all other means of progression, and able still to indulge his love of rambling with those he was born with.

I found to my astonishment that the oldest man on the Island, numbering 106 years, had walked from his own village, a distance of 13 or 14 miles, in order to meet me at another, and walked back again on being disappointed. He subsequently came two miles from his own village to where we did meet, and during our interview, I could not but be much struck with the exhibition he made in illustration of the above remarks. While on his body the skin lay quite loose, and was perfectly festooned with wrinkles, his legs and thighs exhibited as much plumpness, and fullness of flesh and muscle, as they could have done, when they had performed but half their over century of work, and though in other cases I found old men, whose faculties had broken down under years, I never heard of one whose limbs had given way, or who was bedridden; a staff was all the assistance the above old gentleman required.

Beside the above out door duties and amusements all the heavier labours of agriculture fall to the share of the man; but the cleaning of the rice for ordinary consumption after it is brought in. is done by the women, with the instrument in common use for this purpose in other parts of India. This falls to her lot as one of the household duties which are assigned to her; but in none any more than in her general treatment and place in society, has she ought to complain of. Besides her household affairs, she goes to market, and prepares the family meal, at which she invariably eats out of the same dish with her husband. No restraint is imposed on her liberty, and she may attend all places of amusement and religion, unaccompanied by her husband. In the performance of religious duties, the women are more punctual and attentive, than the men. But she is restricted during her monthly state from

having any connexion with them ; to this restraint is added, that she may not touch her husband's head, save for the purpose of cleansing it, when she makes obeisance before commencing work ; that she may not touch the sacred books nor the consecrated image of Gaudma, nor pass over the shadow of a temple or any place containing the said image, but on foot and barefooted.

The villages of the western circles are, strange to say, in better condition, and cleaner than the eastern ones, and the houses display more neatness and attention to repair.

In erecting his hut, the Mug has only to purchase materials, the neighbours assemble as soon as these are prepared, and his house is established in a very short space of time. They are all constructed on the same plan, raised on poles from the ground several feet ; the flooring and walls are of bamboo matting, wove in a neat pattern ; the roof of the Ahtup leaf neatly covered with a frame work of bamboo to prevent its being injured by the monsoon winds.

All apartments whether sleeping, sitting, cooking, bathing, or private, are on this raised floor, through which all refuse finds its way underneath, where what is left by dogs and vermin, serves as manure for the garden attached to each house. Shelter is also afforded underneath to the poultry, of which they have much, and sometimes to the smaller kine. The kitchen range is formed by a round tray of moist clay about 3 feet in diameter, and 5 or 6 inches thick, leaving three small projections or columns on its centre, whereon to rest the cooking pot, when dried in the sun, it is fit for employment, and effectually protects the combustible floor ; the furniture consists of a few reed mats, and each member possesses a wooden pillow, these are the whole amount. The rice for the family meal is served up in a wooden bowl, around which the whole party squat ; the fish, flesh, fowl or vegetables are served in small coarse China tea cups, the right hand, and the mouth are always washed before, and after the meal ; water is the only beverage at the meal, and when it is over, pawn is in use, and the cigar lit. Two meals suffice during the day, the one at 7 in the morning, the other at sun down, and both are very soon despatched. On taking a journey the meal is carried in a few leaves bound up with a rattan ; on such occasions they have also a practice of cooking rice, which I believe to be peculiar ; it is partly boiled, and then pressed with force into a bamboo, with a further portion of water, and when full, the bamboo is put into the fire, and roasted. The rice within, when dressed, thus keeps for many days, and a bundle of these bamboos is the simplest

manner of carrying more than a day's provisions through the jungle. When to be eaten, it is split with the *dâh* ; the rice is formed into a kind of semi transparent jelly of strong consistency with the soft inner lining of the bamboo firmly attached to it, which is eaten with it. When baked with milk instead of water, and with the addition of a little flour, rice cooked in this manner, is described as quite a luxury.

As in the construction of his hut, so in all other labours and necessities, the readiest assistance is rendered by every one to all ; hospitality is universal, and the last grain of rice will be cheerfully shared with the stranger ; every village has its traveller's house, and he who occupies it is the general guest. Besides being too independent to beg when able to work, amongst a people so disposed charity has no place, or rather the universal hospitality is exalted into that virtue. At a late period when the whole province suffered from the visitation of cholera, hundreds of children were orphaned, but neither were they sold as is common in India, nor was the assistance of Government called in charitable aid for their support ; all were adopted at once into families of neighbours or relations, and treated as their own sons and daughters. No part of the revenue was sought to be remitted, on account of the general calamity, but all was paid.

The Mug of Chedooba is strictly honest, no such thing as theft is known among them, and even in the more populous towns, it is most rare, if known, for a Mug to be brought into court on such a charge. In their dealings with one another but one price is asked, though the simplicity and honesty of such a custom is giving way before the worse example of the Bengallee in the larger towns ; but no Mug will degrade himself by a charge of ' customs ' on the purchaser, for the benefit of his servant. To this may be added that in all my experience of them, I do not know to have had occasion to entertain even suspicion of their word. The Mug will not bear the restraint on his time, or his will, necessary to qualify him as a servant ; and though hard labour, when imposed, is submitted to with his universal cheerfulness, it is never freely chosen. Their respect and esteem of Europeans is very great, and any services in their power, were cheerfully performed for our party with no object beyond that of giving satisfaction. On many occasions I have found it necessary to despatch a messenger to the ship, both to take, and to bring communications or supplies ; the parties were always punctual to the time they would appoint for their return, but would never take a pice in remuneration, seeming hurt even at the offer, and whatever return was made them was always obliged to be given strictly as a present, and as a pledge of

approbation and kindly feeling. When engaged in the endeavour to bring down from the West Hill a large tree, which I was anxious to obtain, nothing could exceed the cheerfulness with which the labour was undertaken, in fact so much so as to give it more the character of an amusement; with the exertion of all the able bodied men of the Island, amounting to about 1,200 they were yet unable to move it after many days trial; and they requested assistance from us. With a party of twelve men, and purchases we joined them, and with this assistance the ease with which the tree was moved, astonished and delighted them; the labour was subsequently given up as occupying too much time, but up to the time of their dismissal to their villages, nothing but cheerfulness and good humour prevailed.

Not the slightest inconvenience was occasioned during their stay of 14 days in the neighbourhood of the village, which was our head quarters; parties were sent for their provisions from their own houses, and not a grain of rice or a fowl was demanded from the village, which was just as quiet, with the close neighbourhood of a body of men, as if no one had been there, the jungles affording shelter by night. A dinner was given to all who would remain to partake of it, on their giving up the work, the only return which could be made in approbation of their cheerful and efficient labour, and a promise was afterwards procured for the remission of a portion of the annual taxation, to those villages who were called on to render the greatest assistance in the labour of the Survey.

In the case of one of our Bengallee attendants who had struck a Mug, of which complaint was made to me, was afforded an evidence of their forgiving and unvengeful disposition. The man though much hurt with the blow of a stick, and indignant at it, expressly requested on the offer being made, that no punishment might be awarded, all he required was that such treatment might not again be repeated. They are very fond of public amusements, which are generally given in honor of the exertion of some work of public utility, at these, plays, dancing, and wrestling take place; of the former two, not much may be said; of the latter, the most remarkable feature exhibited, appeared the total absence of all angry feeling on the part of the antagonist. Boxing is also at such times another exhibition.

Old age is treated with great respect, and the elders of a village, even when not officials, are consulted and listened to in all matters of debate relative to the interests of the community. When addressed they are called 'Appogee,' a title of respect.

From his frequent indulgence in bathing, the Mug may be inferred to be partial to cleanliness, but it is more with the idea of cooling his body that so much water is used, his head being seldom wetted, and on this score there is room for improvement in his character, as relates to person and to clothing, but especially with regard to children, whose great freedom from any confinement, calls perhaps for the greater recourse to means of cleanliness in their case.

The language of the Mug is with slight difference, the same as that of his neighbour the Burmah, of which it would seem to be a mere provincialism, and the similarity in this, in feature, religion, and all leading customs, and points of character, proclaim them both to be the offspring of one common stock. A difference in the pronunciation of certain of the letters, constitutes the principal distinctions between the two languages, and of these distinctions, that affecting the Y and the R stands first; the Y with the Burmese is always changed into an R by the Mug. The language in general use sounds uncouth and indistinct, but when properly spoken is said to be otherwise; it is difficult to acquire by Europeans.

The character again is the same as that of the Burmese, so that these people have all the benefit of the productions of the Moulmein press, which are printed in that character, and amongst these that of a translation of the whole Bible into their vernacular. Their own books which treat principally of religious or philosophical subjects are impressed with a style on dried leaves stitched together, and rubbed with the finer produce of the Petroleum wells to preserve them; paper is only used by the district officers of different grades. The religion of the Mug is that of Boodh, and in Chedooba I believe, the only exception to this, is to be found in the Christian convert, who has been before mentioned; in Ramree and the main coast, Mug Mussulmans are not uncommon.

How far the character of the Mug has been moulded by his religion, or how far it is the result of mere natural constitution, is a speculation well omitted here. But in the mild morality inculcated in the code, and practised in the conduct of its professor, at least an adaptation of the one to the character of the other is observable, beyond the common case in these matters, and is both pleasing in itself, and betokens wisdom if not goodness in the framer of the system; this much may be truly said in its praise, but to this is all favorable opinion I think to be limited. The sanction by which its observances are enforced are absurd, and unworthy the attention of a reasonable being. Its history a most childish invention, and is comparatively commendable again in its freedom

from the obscenity which stigmatizes other religions around it. It stands also peculiarly marked off from them, based on its principles of perfect selfishness, in not even acknowledging fear or respect for a Supreme Being.

Annihilation is the goal to be attained, not participation in the perfections, nor reward at the hands of deity; in reference to whose anger or approbation, not an action to be performed has the slight regard, even if his very existence be at all admitted. A certain amount of good deeds registered in the sacred books are to be performed, in order to entitle you to a happier state of existence for another life, which is again to be a scene of endeavour to the same purpose, and this gradual improvement in successive periods and states of existence (if merited) is to continue progressing till a certain point of goodness is attained, when as he can then become no better, existence itself is of no further use, and as the reward of all this labour, in the attainment of perfection, the fortunate being is annihilated; a consummation to which their object of worship, Gaudma, arrived in the most limited number of existences ever yet run through. On the other hand the usual terrors of transmigration are held out, and a fish or a dog, or some less reprobate animal, is to be the lot of those whose misdeeds prevail against their good ones. Some infractions of the law, indeed are of themselves sufficient to ensure such punishment, and I was gravely assured by the principal man on the Island, who was ordered to attend me throughout it, that if unluckily I did shoot a wild pig, hereafter I should meet my desert, in not only being turned into, but actually shot by one myself.

This person, the Soogree of Chedooba, was otherwise a very intelligent young man, and though the most zealous adherent of Boodhism on the Island, yet he seemed but half pleased with it, and was fond of bringing its merits into discussion, and never shewed the slightest symptom of annoyance at the laugh which a relation of its absurdities sometimes called forth, and which his better reason told him was well deserved. He had been at school at Ramree studying English, when called away to succeed his father in the Soogreeship 4 years since; and he had then built a *King* or Church, a work which had fairly committed him to as strict observance of all other good works, saving celibacy, as if a priest. In observing the prohibition to eat of any thing which had ever enjoyed life, in order not to encourage its destruction, he would not touch of food wherein were eggs or milk; but in the list of the protected the poor fish are not included, and he laughed heartily while taking advantage of his privilege, and making a sound

meal of some delicious oysters all alive. When on board the '*Childers*,' he reconciled his conscience to the indulgence of eating salt pork with the reflexion, that as it had been killed so long, and so far off, it was impossible it could have been killed for him.

The observance of this prohibition is the only one generally practised in the Island, and that more through habit, than with a sense of its religious necessity. In short, their religion sits but lightly on them, maintaining its supremacy more because it is unopposed by any other, than from any attachment of the people to its precepts or practice, and when discussing, and ridiculing its absurdities, as brought forward by our friend its advocate, the laugh and joke was fully participated in by all the hearers, who appeared much to enjoy and even promote such a scene.

All the Pagodas are in a state of ruin or decay, or rapidly approaching to it, and broken fragments of the image of Gaudma lie strewn about, without any one attempting the restoration of him or his temple. The old Christian before mentioned, had taken forth his god years ago, and both broken, and deserted him on the high road side, where his remains were pointed out to us without either mark or expression as to any impropriety in such conduct, but contrariwise, the forlorn state of the poor idol excited laughter instead of commiseration. On a remarkable hill in the centre of the Island stands the principal Pagoda in the common ruinous state; no pious hand, had for many a year attempted to annihilate himself by its restoration; but whether in waggery or not, its chief ornament consisted of a cut glass decanter, turned bottom up, on a bamboo stuck into its pinnacle, and excited the laughter of our native party, as much as our own.

The Mugs are superstitious, and though by no means more deficient in personal courage than their Burmah neighbours, yet exhibit in some points a weakness, which might cause a doubt on this point. No Mug will travel alone in the dark, nor even on moonlight nights, for fear of evil spirits or Naths; but when together 'three Mugs will face the devil.' Nothing but positive order and accompaniment by us would induce them to trespass on many of the hill tops, which were inhabited, they said, by these demons, but with us not only would they advance fearlessly, but did not hesitate to fell the trees, though the blame of such sacrilege was always laid on us, in direct apostrophe to the supposed injured inhabitants. On felling any very large tree one of the party at work on it, was always ready prepared with a green sprig, which he ran and placed in the centre of the stump, the instant the tree fell, as a

propitiation to its spirit which had been dislodged so roughly, pleading at the same time the orders of the strangers for the work. In clearing the top of the South Hill, the Chupprassie, whom I had sent to see it done, though attended to the summit with the labourers all ready prepared, was forced to take a dâh, and fell the first tree himself, before a Mug would make a stroke, and was considered to bear all the odium of the work with the disturbed spirits, till our arrival relieved him of the burden. On such occasions, with their customary cheerfulness, the whole body would join in the laugh at the folly of their own superstitious fears, of which they latterly seemed half ashamed. Several of the circles are without any priest at all, and those who are found on the Island do not suffice for the instruction of the children, a subject complained of, and offering an opening of favour to these simple people, which has only to be afforded in order to be appreciated and embraced. Any person of any religion has only to assume the dress and follow the observances of the sacred book, and he is at once acknowledged a bona fide priest.

At Meugbreng an old priest paid me a visit, and begged alms, the only case I ever met with, and not only unnational, but most unpriestly; he avoided the prohibition to touch money by taking it through his yellow gown, and then handed it to an attendant pupil; he had been a Soogree in one adjoining circle, and gave up his office in order to get worshipped as he said. He was nearly 80 years old. No distinction of caste is recognized by their religion, and the priest both eats, and will accept the offering of all and every class. There exists however on the Mainland, some distinction of this sort, observed among the laity; they are the remains of the political quarrels and dissensions of the Mug Raj, and are fast wearing out. They consist in feelings of prejudice against the eating and drinking with those who are descendants from the captives of former wars, to whom the most menial offices were assigned; they have no existence on Chedooba, nor will have shortly elsewhere among the Mugs. The priests are forbidden even to look at women, even their eyes may not wander above a limited distance beyond their feet, lest they should light on the forbidden image; he may not eat after midday, when his second meal is taken, his first having preceded it about 6 hours. The dead are burnt, the bodies of priests with great pomp and ceremony, after being preserved a considerable time, and the bodies of all with decency; this constitutes a very meritorious deed when performed with the remains of a stranger.

Chedooba as observed, has not many strict votaries of Boodhism; but its effect in the neighbouring countries where acted on in strictness, is

curious in some particulars. It has a direct tendency to destroy all feeling of gratitude, the real favor conferred being on the part of the receiver, in the opportunity afforded by him to the giver of performing a meritorious act. Robbery and even murder have been committed for the sake of the means of erecting a church, or constructing a road, or a tank, and the end has consecrated the means. These good works are performed in Chedooba as elsewhere among Buddhism, but I was inclined to think with motives more pure, and that the general character of its inhabitants would justify the opinion, that the reward outwardly and inwardly reaped by the performance of such public benefactions, is inducement enough to their execution there.

The construction of such as above, of wells, traveller's houses, or the keeping of any of these in repair, renames the party undertaking them, and he is thenceforth only known by the honorable title of the 'well digger,' the 'road maker,' the 'house builder,' &c.

The old Christian above mentioned, is the only one on the Island, and is a sincere, and pious old man, deeply interested in the improvement, social and religious, of his Island countryman. He is intelligent and well informed for his means, of the mildest manners, and benevolent appearance; though between 75 and 76. His pittance is small, 5 rupees a month from the American Baptist Mission, of which he is an assistant; he is listened to with great attention and curiosity, but, unsupported as he is, and with but little encouragement, his success is small.

Ramree, the chief town of the Province, enjoys the privilege of a School, where English is taught, and Chedooba, as a part of the province, is entitled to send its quota of pupils. But the habits of the people, and even the regulations of the school, deprive its inhabitants of making almost any use of it. Payment is required; there may be no friends at Ramree to take charge of the children, and the Chedoobans are attached to their Island too much to allow willingly even their children to leave it for any length of time, very few parents, therefore, and those chiefly the Island authorities, give their children the benefit of the advantage offered by the provincial school. But the payment which is begrudged to the Ramree establishment, would be willingly made even in higher amount to one at home; both children and parents in Chedooba are all common friends, and mutually known; and such an establishment, which the deficiency of priests, for educational purposes, points out as wanted, would soon meet with that most grateful appreciation of the boon, a large attendance, nor in other respects would it be without reward to its founders. Not a whit behind his Ramree brother in intelligence and

desire to improve, and especial desire to learn English, the simpler, and more honest and moral character of the Chedooba scholar, would give to him the preference, for filling those grades of employment in the public offices open to him; while the grateful reflection would not be wanting, of affording a valuable means at once of improvement, and of the maintenance in fact from contamination, of a character high and rare, to perhaps the most interesting community under the Government of British India.

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DIVISION VI.

*Geology.*

The Geology of Chedooba presents characters of so much general interest, that any report on this Island might be looked on as imperfect, in which the subject was wholly omitted.

But as it is intended in a separate notice to give such details, accompanied with specimens, as may render the subject capable of investigation, by those able and interested in the science; the present one will be here confined to a mere statement of the general features exhibited. The elevation, out of the sea, of large tracts of land by effect of volcanic action, has in more modern times been noted as occurring on the coast of Chili in South America, and in the territory of Cutch in this country. In the former case some doubt has been thrown both on the fact itself, as well as its amount; and the circumstance of a similar phenomenon having taken place within the memory of man, not only throughout the coasts of Chedooba, but extending over all the shoals and islands from the Terribles, off the north end of Ramree, to Foul Island, will be held a not unwelcome addition to the evidence yet gleaned of the occurrence of such extensive changes of level in the present day. The above are the limits of the survey on which the '*Childers*' has been employed, over every part of which the evidences of this elevation were seen, and in many places accurately measured, and it includes the whole of that irregular collection of Islands and shoals, which, projecting far into the Bay of Bengal, yet maintain the general direction of the main land coast near it.

But these limits are not to be taken as those which bound the elevation, which, with little doubt, from similarity of formation, will be found to extend north and south and east, over all these parts of Arracan, so peculiarly marked by the intersection of deep narrow, salt water creeks, from Ayab, even perhaps as far south as Cape Negrais.

The line which was under observation is about 100 miles in length, varying from 20 miles in width, to that of a mere patch, according as

opportunity of notice was afforded by the existence of rocks or islets above water, and its general direction is from N. W. b. N. to S. E. b. S. The elevation has been greatest towards the centre of the line examined; at the Terribles about 13 feet, on various parts of the N. W. reef of Chedooba 22 feet, at the north point of the Island 16 feet, at the centre of the Island on the west coast 13 feet, at the southern end 12, and at the Islands south of it, as far as Foul Island from that to 9 feet.

It would also seem to have been greater on the western limit of Chedooba, than on the eastern, a fact not however ascertained from the extensive level plains which exist on this side, whereas on that, measurement was easily made on the sides of perpendicular rocks. This elevation occurred about 90 years ago, and there is, now living, a party 106 years old, who was then 15 years of age, and had been accustomed to fish over a portion of the now upraised land. On the coasts of Chedooba, its traces are in most parts as clear as could be wished, bounding the natural jungle with a bank of greater or less height, composed of sand or of shingle—the plain beyond being thickly strewed with coral and shells, such as are now growing on the shore. The natives are all perfectly aware of the bank having formerly been the limit of their Island, and even the youngest would point it out, if asked to do so.

The old man above mentioned was not in Chedooba, but at Ava, when the event happened, he had gone thither that year, and experienced at that place the violent earthquake which accompanied the elevation. From other natives of great age, I received information of the occurrence, not direct, but traditionally from their parents.

The earthquake was very violent, the sea washed to and for several times with great fury, and then retired from the grounds, leaving an immense quantity of fish; the feasting on which is a favorite story throughout the Island; no lives were lost, no rents in the earth occurred, nor fire from the volcanoes of the Island.

The above is not the only event of the sort traditionally known, another occurred a century previous to it, and these elevations are considered periodical by the inhabitants, occurring every 100 years, and the next one is even expected in the course of a few years, and would excite but little surprize. Traces of a third beach line were several times thought to be found, before this information was given; but on the western coast, about half way down, an evidence of its truth was afforded; a remarkable column or rock, about 40 feet high, standing on the beach shewed the remains of a second line of rock. Oysters adhering to it, at an equal elevation of 13 feet above the first, as it was again, above the one, which on

all the rocks of the western coast distinctly points out the limit of the present high water. On Flat Island was subsequently found three distinct beaches, and the coral found on the different extents of the Island clearly proclaimed in their relative states of decomposition, the difference of their periods of exposure.

The external and more apparent means by which these great changes are effected, are as yet known, I believe, quite peculiar, and exhibit features which may be valuable in assisting investigation into the immediate causes of volcanic violence.

Every one of the mud volcanoes of Chedooba were visited, and examined as well as those of the neighbouring Islands, south of it, and on none with strictest search could be found any traces of direct fire, or of those peculiar formations produced by that agent, gas alone seems to be the one immediately occasioning these strange exceptions to the general character of volcanoes. It is no doubt inflammable gas, and the light given by some of them in activity has been so great as to enable a book to be read by it at a distance of 9 miles, as was credibly related to me as having occurred at the last eruption of the large Volcano of Meugbreng, the largest on the Island: that heat is present in the more recent ones, I found it myself to be the case, in one examined on Ramree, where the mud brought up on a bamboo from, 17 feet in depth, shewed a temperature of  $92^{\circ} 20'$  above that of the atmosphere. But a white stone like chalk found on all the large volcanoes, which was considered as the common greenish sandstone discolored by heat, was the only substance found, which exhibited a trace of no intense heat, and in this case the abstraction of color alone was effected without the least change of composition or form. The large volcanoes of Chedooba are four in number, they are detached mounds rather than cones, varying from 100 to 1,000 feet above the level of the sea, composed of a stiff grey clay with large quantities of singular fragments of stone, their sides much cut up by the effects of rain, their summits quite bare, and from 210 to 50 yards in diameter; on these are disposed cones of stiff clay from a few inches to 4 feet in height, and the same variety of dimensions, in diameter. These are hard on the outside, but filled half way up with a thick well mixed mud, which every now and then exudes from a hole at the sides or summit\*, at the bursting of a bubble of gas which occurs every 3 or 4 minutes. There are two other volcanoes of small dimensions, and but little elevated above the plains where they are found to exist; they are composed of the same

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\* The readers of the Journal will be struck with the similarity of the description to that of the mud pools at Hinglaj — *As. Soc. Jour.* No. 94.

soil of mud, emitting large bubbles of gas; and besides these there are two spots whence water alone is brought up by the gas. In all these the water or mud is salt, and their number with the four Petroleum wells which are in constant ebullition with gaseous exhalation, seem to exhibit this agent as powerfully, and extensively at work, throughout the Island. The minor volcanic vents seldom exhibit any change; the larger ones when in eruption, which generally takes place during the rains, either throw forth to a considerable height accompanied with flame, fluid mud, which spreads over a certain extent, or the surface effected boils with the escapement of gas, bring too consistent to flow or be thrown up. The angular fragments of stone mixed with the mud are clearly torn from the strata, through which the vent is forced, and small portions of copper ore are found attached to some.

Besides the volcanoes seen, one was described as existing under water on what is now a reef N. W. of Flat Island, and which a few years since gave forth flame when in eruption. But independent of such direct evidence a mere examination of many of the reefs would convince of the fact of the bed of the sea being equally affected with the surface of the land.

I conclude with the observation that the clearness of the jungle of Chedooba, the healthiness of its climate, and the late clearing of the principal hill tops for purposes connected with its survey, afford for the ensuing fine season a most interesting ground whereon to examine, more minutely than either time or ability would enable me to do, the peculiar geological features thus briefly noticed.

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*Examination and analysis of a soil brought from the Island of Chedooba by Capt. HALSTEAD, of H. M. S. 'Childers,' by HENRY PIDDINGTON, Offg. Curator Museum Asiatic Society.*

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This soil was sent with a collection of soils and minerals from Chedooba, for the Museum of Economic Geology, with a request that a report might be made upon them. I was immediately struck with its resemblance to the finest Georgia Sea Island cotton soil which I analysed in 1838, and which has such a peculiar appearance—resembling a mixture of sand and charcoal—that it immediately attracts attention; I thought it well worth while to ascertain their identity. To show how nearly they are like I set down in parallel columns the results of my examination of the Chedooba soils and of the American one; the last abridged from my paper on the cotton soils of America, India, Mauritius &c. in vol. VI. of the Transactions Agrl. Soc. of India, p. 198.

APPEARANCES.

American Soil.

Chedooba Soil.

1. When sifted, like fine dark-grey sand and charcoal dust, artificially mixed.

2. The sifting coarse sand, fragments of sandstone and shells with pieces of dried and charcoal wood, or charcoal in all states from charcoal to soft lignite.
- The same.

The same, but no shells, and the sandstone in very minute fragments—perhaps owing to the specimen being in very small quantity.

With cold water.

3. When agitated settles in a coarse greenish-grey sand, with a layer of black matter above it.

4. When left for a day or two water is tinged of a pale yellowish colour.
- The same.

The same.

Heated in the Matrass.

5. Smokes and gives out a strong peaty odour. Silver leaf and litmus paper are discoloured and a brown smoky-tasted oil is deposited in the tube.
- The same. The silver leaf I think more discoloured ; the litmus paper not so immediately. In all other respects the same.

Analysis gave

Saline matter, Mur. of lime and soda, but no potass.....	0.20	Saline matter Mur. of lime and sulphur of soda, but no potass .....	
Vegetable matter : mostly lignite or peaty powder with a little water. ....	3.20	The same .....	2.00
Iron, protoxide. ....	1.00	Protox. (and peroxide in small quantity ?) .....	1.75
Carbt. of lime .....	2.76	Carbt. lime.....	3.00
Alumina.....	0.20	Alumina . ....	0.40
Silex .....	92.00	Silex .....	91.65
	99.15		99.05
Water and loss..	.15	Water and loss..	.95
	100.00		100.00

## Remarks.

Silex is mostly in coarse glittering grains like pounded loaf sugar, shewing that it is mostly from *disintegrated* and not decomposed rock.

The same, but grains of silex duller and more powdery, silex with them.

N. B.—The smell of Petroleum is owing to a bottle of it having been sent in the box.

For all agricultural purposes these soils may be pronounced so nearly the same, that, in the same climate, the difference would only lie in the amount of produce being a little more or less on the one than on the other. The Chedooba soil contains but one ingredient, Sulphate of Soda, not found in the American, but this is in extremely minute quantity, and moreover seems favourable to the growth of cotton, for the soil of the Tinnevely district, which produces the Madras, Bourbon cotton, contains it, as does also that of Singapore, on which very fine Bourbon cotton is grown.

Captain Halstead's remarks on this soil are as follows.

'No. 11, represents the more sandy soil of the eastern circles. It was taken from the neighbourhood of Mengbrenng. The circle of that name with the one just noticed (Mrooma) are the most populous on the island, the greatest quantity of exports being produced in these, and chiefly on this soil—a more productive one than its appearance would seem to warrant.'

The importance of this curious soil to America we well know. It may be hoped that ours may be ere long turned to account and that many other spots on the islands and coast, from Akyab to Sandoway, may be found to possess it. From difference of climate, as far as this may affect the cotton, there will be, I trust, little to fear, for we know that the dry months allow time enough for the production of all kinds of cotton, some of very fine quality, on the main land of Arracan; and it is mentioned as a product of Chedooba by Captain Halstead. Very fine Sea Island has been produced on Saugor Island, and the late Mr. Kydd gave me a very beautiful sample of it, which he said was grown there 'upon a sort of black sandy soil' but I could not obtain a specimen of it. I venture to suggest that if a small quantity of the Sea Island seed was sent down to the Commissioner, accompanied with a brief notice, to be translated into the Mug language, and distributed with the seed, stating what it was, its great value when carefully picked, and that no sort of extra rent or claim would be made for this kind of cultivation, we might hear of it again? Small prizes might be offered to those who produced the best samples.

HENRY PIDDINGTON.

*List of Soils and from whence taken.*

1. Clay of npraised plain, near the N. W. point of the Island.
2. From Rua Tanghee inside the above plain.
3. From the N. W. peak.
4. From the West Hill.
5. From interior of Krae-roue circle.
6. From Eastern part of Krae-roue circle.
7. From Petroleum well of Krae-roue.
8. From West part of Inrooma circle.
9. From central valley of Inland (Inrooma circle.)
10. From Petroleum well of Inrooma circle.
11. From village of Meugbreng.
12. From interior of Meugbreng circle.
13. From Tang-roa circle near Rua Sekkea.
14. From the summit of Pagoa Hill.
15. From Ree-giung (Flat Island).
16. Iron ore from North beach of Chedooba.
17. Copper ore from different volcanoes of Chedooba.
18. Coal or lignite from Tang-roa circle.
19. Petroleum of Krae-roue.

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It appeared advisable to attach to the accompanying selection of the soils of Chedooba, the few following observations on the subject in addition to the mere list of places whence each was procured.

In making the selection, which was done during a progress on the greater part of the Island, high and low, jungle and cultivated, and mostly on foot, from the 1st of January to the beginning of March, care was taken to choose soils which should represent those of the greatest extent to be found on the Island, and where specimens have been taken of soils less general, they have still existed over extents ample enough to afford room for the cultivation of that produce, for which they might be considered most applicable. But here it may be at once observed, that no material difference or contrast was found to exist in the soils of Chedooba; a clay of light brown or grey colour, more or less modified, as it had been subjected a longer or shorter period to the effects of tillage or natural vegetation, constituting the bases of all. This clay base being again on the eastern parts of the Island found with a large admixture of fine sand. This clay base seemed to give throughout a permanence to the productiveness of the soil, which must constitute a very valuable quality,

placing it on a par with those which if more fertile or sooner exhausted, from generation to generation the same lands being yearly cultivated without manure; traces of lands lying fallow it is true, were discoverable in many parts, and sometimes extensively, but on enquiry they proved to be those which had fallen out of cultivation from the decrease of population attendant on the disturbed state of all these countries for many tens of years previous to our occupation of them, and not from exhaustion of the productiveness of the soil. But the clayey nature of the soil appears to make it liable to yearly improvement by a process of manuring of natural occurrence, and which is most effective where most needed, in the newer soils of the lately upraised lands.

During the dry weather the surface of the soil becomes cracked in every direction to a considerable depth, but mostly so in the above lands, where a stiffer clay is found, and into these cracks dried leaves and grass at such times fall in considerable quantity.

A custom is also prevalent of burning the dry grass, stubble, &c., every year at the close of the dry season, the ashes from which are therefore all ready to be washed deep into the body of the soil, by the first heavy rains of the monsoon, which do not close the large openings for some time. The large quantities of Coral and Madrepore distributed over the surface of the new plains, is also by this practice of annually burning very much aided in its decomposition.

I was informed by a native that the extensive new plain of the N. W. part of the Island, which was raised out of the sea about 90 years ago, was only then acquiring its first covering of grass when visited by him 15 years after its elevation. That produce now covers most parts of it high and luxuriant enough to screen a buffaloe from sight, while other parts yield ample crops of rice, and where not otherwise claimed, the jungle is fast taking possession of it, especially over those more rocky portions which have on them the greatest amount of Coral.

The clay soil of this plain is shewn in No. 1, compartment. Embosomed in trees on the old N. W. point of Chedooba, and therefore just within the border of the above plain, stands the village of Tanghee, the soil of its neighbourhood includes a larger amount of vegetable mould, than is to be found in that of the plain so low as will be seen by the specimen of it in No. 2.

This soil may be taken as representing all the cultivated soils of the western part of the Island which lie within the limits of the old beach time. It amply repays all labour bestowed on it, though such labour is at present small, owing to the smaller amount of population to be found in

the two circles of Kam-mad, and Tang-wa, which enclose this side of the Island, than in any of the others with one exception; this want of population arises from other causes than any connected with want of productiveness in the soil.

Chedooba was originally peopled from the eastward, and has never been so thickly inhabited, as to oblige the cultivation of the western lands, which have therefore been hitherto visited, more than inhabited, the want of gratification for his social habits always driving the western settler, after a certain period of sojourn back again to his more thickly populated native village to the eastward. The present Rua-gong of the village of Kammaa was formerly Soogree over but seven houses, in a district where his own village now numbers 300.

The extent of plain between the hills and the sea, half way down the west side of the Island is small, but I here saw one of the largest and richest gardens of plaintains in the whole Island, while as the general produce of the above soil along the limits mentioned. I observed, rice (the staple) tobacco, sugar cane, some cotton, hemp, and indigo (in cleared spots in the jungle); of fruits and vegetables, the cocoanut, plantain, orange, lime, tamarind, yam, bringals, and other garden produce of these climates.

The specimens in 3 and 4, represent the soil found generally in the hilly, and jungly parts of the Island. The largest and most luxuriant trees in the Island are found in the loose friable soil which is found on all the hill tops, in that of No. 4 were flourishing perhaps the very largest on the Island. An oil tree felled measured for a length of 60 feet, 4 feet 6 inches, and 3 feet 6 inches in diameter at its respective ends, and a like tree left as a beacon, on the summit of the hill, measured 21 feet 4 inches in girth, as high as the arm could reach.

In mentioning however the size of these trees, it is not to be inferred that valuable timber is to be looked for as a produce of Chedooba. The largest trees are almost exclusively confined to the hill tops, where they are difficult of access, and of no very valuable quantity, enough however, and of sufficient size, and good quality for all domestic purposes, is every where to be found, nor do I doubt that woods, affording valuable produce of different kinds, would on examination be found among the jungles. The wood-oil tree as has been observed, was found in luxuriance on the west hill, where was also the gamboge, and many trees large and small yielding caoutchouc, some in great profusion. I would here mention while on the subject of the jungles, that no part, in the many miles of it, travelled through, appeared to offer any serious ob-

stacle to clearing for cultivation ; there are few parts where a Mug with a good dâh would not fell in one day the trees over half an acre ; much of it consists of open clamps of bamboo, and throughout the lower part, open plains of grass of more or less extent are very frequent ; in no part which was seen would a person on foot find any obstruction in walking which way he would, and this is stated from experiment, having been over many parts where no native ever before penetrated, not from inability but from superstitious fear.

No. 5 and 6 represent generally the soil of the Krae-roue circle, the Northern one of the Island of which parts are more sandy than others, but the whole very productive. I found the betel in this circle first, and in its jungle, of which it has a due share, the caoutchouc plant of South America ; a good deal of Rice for export is here grown.

No. 7 is a soil taken from the neighbourhood of two Petroleum wells, which lie close to one another in this circle, having no doubt one common source of supply. This article, as may be seen, is surely a produce of the soil, which by simplest means might greatly be increased ; at present these two wells yield about half of the 300 pots, which constitutes the yearly produce of the four petroleum wells of Chedooba.

No. 8 is a soil taken from the next adjoining circle, eastward to that of 'Inrooma.' Its principal village (Chedooba) boasting to be the capital of the Island. The specimen, and No. 5 may be taken to represent the interior and more clayey soils of all the Eastern circles, including those of Inrooma, Mengbrenge, Kyonk-tair, and the eastern part of Tang-rua. While No. 9 taken from a spot in the same circle, is, I apprehend of more limited extent.

Near the centre of the Island, and not far from the large Volcanoes of Meng-brenge we came on a small level valley with a stream running through it, on either hand overlooked by wooded hills. This valley whence No. 9 is taken, was the best cultivated spot I had yet found, being one continued tobacco garden and were the best of that plant on the Island is produced. While speaking of this article, I venture to express by belief that parts of Chedooba would produce with proper care and attention, as good tobacco as perhaps any in the world ; and here I speak also from experience. My own stock of Cigars having been expended, I procured some to be made for me on the Island, out of native tobacco, many of which to my gratification and surprize I found of as high and as delicate a flavour as any which I had ever tasted direct from the Havanna. But the leaves of which these were formed, appeared to be accidentally larger and more ripe than they are generally gathered. Though as it is at present planted and prepared. Chedooba tobacco is highly prized.

No. 10, shews the soil from the neighbourhood of a petroleum well in this circle (Inrooma). Some time since it was destroyed by fire, since which the public claim it, but its produce is therefore nothing, though the soil is full of the oil.

No. 11, represents the more sandy soil of the eastern circles. It was taken from the neighbourhood of Mengbreng. The circle of that name, with the one just noticed (Inrooma) are the most populous on the Island the greatest quantity of export rice being produced in these, and chiefly in this soil,—a more productive one than appearances would seem to warrant.

No. 12, is also a soil of the Mengbreng circle, and taken from a spot about 3 miles W. S. W. of the village of that name, and amid the jungle. It may not be put forward as a representative, though in the neighbourhood whence taken, it may be extensive. The largest trees were found on the lower grounds principally; the wild mangoe were found growing in this soil.

No. 13, from the Tangee, a circle and neighbourhood of the village of Tekkea, at the foot of the south peak, is again a soil peculiar as far as was observed. East and west of it the cultivated soils are represented by No. 2, while Nos. 3 and 4, perform the same office for the soils of the hills which are highest in this the southern circle of the Island.

No. 14, is a specimen of the most peculiar soil on Chedooba, taken from its only barren spot, the higher parts of its central hill.

No. 15, is not of Chedooba at all, but from its sort of dependency, Flat Island, separated from it by a narrow strait. It has been added from its great similarity to the stiff clay of No. 1, whose productive properties it may serve perhaps to illustrate.

It was taken from the centre of the Island where it had been under constant cultivation for more than one century, yielding an ample annual return. Every patch of available land on this Island is fully tilled, its centre, one continued rice ground.

Nodules of Iron ore, as in No. 16, will on search be found generally over the Island, either embedded in the greenish sandstone, or having been detached from it. Though often very rich, they are not in sufficient quantities to amount to valuable, nor am I of opinion that the ore in continuous beds will by any search be discovered.

No. 17, shews some fragments of copper ore, a few also of silver may be found, but both are confined to the surface of the volcanoes in the Island, and have been ejected by them from beneath. Even on these sites a strict search is necessary to detect them. I only heard of one piece of the size of two eggs having ever been found.

But it may be fair perhaps to increase the apparently small list, by the admission that there exists a disease to a considerable extent, to which the inhabitants of Chedooba are subject, and under which at every village we found perhaps many sufferers, women as well as men, but chiefly the latter; nor in any case though always coming forth to meet us, did it seem to be looked on by either the parties themselves, or their friends as a case on which to apply for commiseration or relief.

‘Old age’ is very prevalent on the Island, and but few of the villages of Chedooba but can produce more than one, often several, of their inhabitants labouring under the affection of four score years or upwards; many under such burthen, hale, almost vi\_orous, in mind and body. The party who informed me of the period taken for the clothing of the N. W. plain with verdure, and who had till 15 years old been in the habit of fishing over it, when under the Sea, with his father by name Pallaree, and living in the Inrooma circle, is generally looked on as the senior amongst these ‘Appogee’ (a respectful term of address to old people). He claimed to have run through 106 years, at which age he walked 12 or 13 miles in order to meet us, and on being disappointed then walked back again (not I believe the same day); when we did meet, it was after a walk of nearly two miles, when he was certainly in body, rather shakey, but after a short rest he recovered himself perfectly. His mind and memory were perfectly sound, as also his hearing, and sight, his speech very slow, but clear and distinct; not a tooth in his head was gone or apparently inclined to depart, and he was not only cheerful, but joking with all around. He ridiculed my not being so old as his great-grandson, who accompanied him, said that he had left off eating animal food but two years since, and when questioned as to what had been his customary food in ages by-gone, answered readily ‘any thing even a part of a man if I had wanted it,’ a confession which he only modified, to the laughter and remark of the party around, by adding ‘if it had been given as medicine,’ I know not whether it may be taken as evidence of the existence, to any considerable extent, of another interesting disease in Chedooba, to add that Pallaree, entered into the bonds of matrimony with his last wife 2 years ago.

(Sd.) C. P. HALSTED,  
*Commander.*





Very Shallow - Generally less than three fathoms

Very Shallow - Parts dry at Low Water



10 A B The coast line east of the A & S points is taken from Capt. Lloyd's survey. The yellow coloured ground is the land raised by the last Eruption, lying between the present and former coast lines.

10 A B The former coast line portrayed throughout the map by the dotted red line is the coast of the A & S points. The number 1 denotes that the ground is shaded with masses of coral & other rock. Square Rock exhibits a water line 24' above the present sea level. A W of it are many rocks, A reef which were thrown up with the present beach. Pillar Rock, about half way down the western coast, has two former lines the more recent one 13 feet the other 26 feet above the present sea level.   
 ○ denotes a volcano   
 ● in the spot that marked coal

20 Of the raised ground on A W of B, the western portion, or that nearest to the volcano in A B point, is quite level the central part is undulating, & the interior, or that nearest to the volcano, is a low hill. The low hill is a low rise, not very uneven. West of this low hill, with from Pillar Rock, is a hill. The rest of the ground is perfectly level & covered with thick jungle.   
 □ specimens of the Soil have been taken from the spots thus marked

Scale of Miles

Lignum vitae



*Report on the Soils brought from Chedooba, by H. M. S. 'CHILDERS.'*  
*By the Officiating Curator, Mus. As. Sco.*

The box of Soils and Minerals, brought by Capt. Halsted, having been referred to me for report, I take leave to subjoin the following remarks to Captain Halsted's very able notes. He has, most unfortunately, omitted to bring us specimens, of the different *rocks* as well as of the soils. It would have been highly desirable to have had a complete series of these, from the beach lines to the highest point, and in various directions, with as many shells and other organic remains, as could be found, and measurements of elevation; especially those of the 'old beach lines' alluded to by Captain Halsted. Such a series if it can be still obtained, would be of the greatest interest, for we have there an active volcano in the centre of an Island, upheavements going on on the Coast within the memory of man, and coal found; all within the space of a few miles! I need not say how valuable rocks and organic remains would be to illustrate all this.

In the absence of any geological data then my remarks must be mostly agronomical, as regards the soils, and mineralogical in regard to the minerals. I take them in the order in which Captain Halsted has numbered them.

No. 1. Of this little or nothing can be said in addition to Captain Halsted's remarks. The process of natural manuring, to which he alludes is not however, I should think, the sole cause of the fertility of the soils. It will be seen upon close inspection, particularly with a magnifier, that minute particles of carbonaceous matter are dispersed throughout the mass as if they had been originally deposited with the soil, by whatever process this was formed; the one described by Captain Halsted would scarcely we may suppose have distributed it so evenly, but a more extended examination on the spot, could alone entitle us to argue safely on the subject which is one of much importance. No 15, is a soil of the same kind, and it has also some, though a smaller, mixture of carbonaceous matter dispersed through it: both appear to be surface soils only.

No. 2 and 3, are more sandy. No. 3, seems to contain some carbonaceous matter also.

No. 4. Remarkably assimilates to the tea soils of Assam and China, in appearance! and like those of Assam this also occupies the higher spots. As the climate and population of Chedooba probably place tea out

of the question, as a product, I have not thought it worth while, to institute any closer examination.

No. 5. Contains, apparently, a portion of carbonaceous matter.

No. 6. Does not shew any trace of it.

No. 7. Is a very curious soil, if of any extent, on account of its locality in the neighbourhood of the petroleum wells. Captain Halsted does not say if these soils are fertile or barren, which it would be of interest to know; vegetable matter, in the shape of leaves and roots, abound in the specimen. As No. 14, is said to be 'the only barren spot' so that we may suppose this was not wanting in fertility. Nos. 10 and 12, much resemble No. 7. in appearance, though they are not so strongly impregnated with petroleum.

Nos. 8 and 9. As tobacco soils probably owe their superiority to the free peroxide of iron dispersed through them in veins and spots.

No. 11. Is identical with the best Georgian Sea Island cotton soil. I must refer here to my special report on this soil :

No. 13. Is remarkable as being the only soil which offers any sensible proportion of free calcareous matter in the shape of *debris* of shells; and here again we have to regret the want of the rocks, for these would have assisted us in forming a judgment as to whether the soils have been formed from their decomposition, or in horizontal beds and raised up with the Island. We have here a succession of strata through which the volcana may have forced its way without much disturbance? or which may have been raised up so as to shew its edges in overlying beds? Which should then correspond round the volcanic centre; or which may have been formed by the eruptions? All these are curious questions for investigation, and it is to be hoped will not long be left unexamined.

No. 14. 'The only barren spot on the Island' says Capt. Halsted 'being the highest part of the central hill,' I could not on examination detect any saline or acid impregnation in this soil, and I should take its barrenness, in the absence of any gaseous exhalations, which are no where noticed in the report, to be owing to the great quantity of peroxide of iron which it contains, so much indeed that it is almost a red ochre.

No. 15. I have already referred to above.

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### *Minerals.*

No. 16. Is sent as iron ore. It is merely composed of masses of amorphous iron pyrites, and wholly useless as an ore of iron.

No. 17. Is also unfortunately not copper ore, but cubical iron pyrites, containing no trace of copper, and quite valueless, unless it be abundant enough to smelt for its sulphur where fuel and labour are cheap. The mass of silver ore alluded to by Capt. H. was probably a lump of the white kind of pyrites.

The coal I should think promises well, judging from these specimens at the out-crop of a seam. It is bituminous, though not highly so, and I found also its Sp. Grav: to be 1.31, which is that of the best Burdwan coal. Its appearance and the fracture of some of the specimens are also in its favour, but any opinion would be premature till we have samples from a greater depth.

The petroleum does not call for any remark.

H. PIDDINGTON.

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*Illustrations of the Genera of the Bovinæ.—Part I. Skeletons of Bos, Bibos and Bison, the individuals examined being the Common Bull of Nepal, the Gowri Gao of Nepal and the Yak.*

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Bos and Bibos, resemble one another in the general formation of the trunk, and in having each 13 pairs of ribs, and 6 Lumbar vertebræ. In both, the ribs, from the 5th pair inclusive, bulge outwards gradually to the 13th which are the farthest apart. In Bisonus, on the contrary, all the ribs are much straighter; the first 6 pairs diverging very little more from the perpendicular than in a horse; from the 7th to the 10th pair inclusive, the bulging is greatest; the latter pair being the farthest apart, whence to the 14th they rather approximate, the last pair being nearer one another than the intermediate ones. This gives a cervine character to the trunk of Bisonus. In Bisonus 14 pairs of ribs, and only 5 Lumbar Vertebræ, making an equal number of Vertebræ, in all 3 animals.

The differences between Bos and Bibos, are as follows. The spinous process of the Dorsal Vertebræ in Bibos from the 3d to the 5th inclusive are of equal length, with a very gradual shortening of the others to the 10th which is 2 inches longer than the 11th, and the 12th is two inches shorter than the 11th. The droop towards the loins from the greatly elevated spinal crest of Bibos is so sudden, that in one specimen in which the spinous process of the 10th vertebra measured  $10\frac{1}{2}$  inches, that of the 13th was only 5 inches. In Bos, the 3d spinous process is the longest whence the droop commences, the dorsal spines gradually shortening until the 10th, whence to the 13th they are not longer than those of the

Lumbar vertebræ. The Humerus in Bos, compared with the fore arm is somewhat shorter than in Bibos. The carpus and canon united, compared with the fore arm is shorter in Bibos than in Bos.

The following comparative peculiarities in all these animals present themselves:—

The skull and horns are greatly heavier in Bibos than in Bos or Bisonus. The forehead of Bibos is at first sight hollow, but is actually flat; the concave appearance being derived from a great transverse arch of bone which surmounts the face; projecting forwards in some degree, but its direction taken along the convexity parallel with the centre of the horns' cores. The orbit in Bibos projects more than in Bos, or Bisonus: the nasal bones are *most* arched (transversely) in Bibos, *least* so in Bos. The face—from anterior margin of orbits to muzzle—*longest* in Bisonus, about *equal* in Bos and Bibos. In Bisonus the forehead above the orbits, is transversely arched, in Bos it is quite flat. In Bos, placing the muzzle on the ground, the parieto-frontal junction is flush with the superior aspect of roots of the horns' cores. In Bisonus, placing the skull similarly—the superior portion of the frontal bones is, for about an inch and a half on each side, on a line with superior aspect of roots of horn cores; the medial portions and frontals are considerably elevated, forming a central truncated cone between the two portions already noted as being on a line with superior aspect of root of horn cores. In Bibos again, the skull disposed as above, a large bony arch protruding so as to overhang the forehead runs across from horn to horn, the arch commencing at once from their roots. Viewing the three skulls from the superior margin of the intercornual space, (skulls placed as before with muzzles on the ground) to the foramina magna, the following differences appear so remarkable in Bibos, as to be alone eminently fitted for at once distinguishing it from the others. In Bos, the entire space from the superior margin of the foramen magnum, to the intercornual crest of the frontals, is occupied by the insertions of the nuchal muscles, and it is nearly square (trapezium.) In Bisonus, the same space is an equilateral triangle, and divided into two separate parts. 1st. The truly occipital portion, into the whole of which the nuchal muscles are inserted, formed *anteriorly* (the muzzle on the ground) by a slightly arched line drawn between the posterior margins of the bases of the horn cores; and *posteriorly* by the superior margin of the foramen magnum. 2nd. The parieto-frontal portion, of a triangular shape, free from muscular insertions, only  $\frac{1}{4}$ th the extent of the 1st portion, and forming the apex of the larger triangle.

In Bibos, the same space (or postea aspect of the skull) is of a spheroidal shape, deeply indented about its centre by the temporal fossæ, thus dividing it into two nearly equal hemispherical portions, viz., the anterior and larger one formed entirely by the great intercornual crest, and free from the insertions of nuchal muscles and ligaments, and the posterior or truly occipital portion, occupied wholly by the insertions of the neck muscles. The size of the intercornual crest in Bibos is so great that the postea aspect of the skull equals in extent the antea one, bounding the latter inferiorly by a line drawn across the face from the centre of the orbits. Leaving the skulls, the following are the comparative differences in the trunk of these three animals.

The great developement both in elevation and extent of the spinous ridge in Bibos, at once distinguishes this animal from Bos and Bisonus. In Bos the greatest elevation, much inferior in height, is confined to the spinous process of one vertebra (the 3rd) whence the declension is uniform to the 10th. In Bibos the extreme elevation is extended to three of the spinous processes (the 3rd, 4th and 5th), and considerable elevation prolonged to the 11th. In Bisonus again, which occupies a middle station between Bos and Bibos in regard to *extensive* developement of the spines, the extreme elevation, great in height as compared with Bos, is confined to one spine, whence the declension is more sudden than in Bibos, but less so than in Bos. These differences in the skeletons are manifested in the living animal thus: in Bos the rise from the neck to the greatest elevation of the spinous processes is most gradual, the highest point being between the scapula, with declension thence gradual and uniform. In Bibos the rise from the neck is more abrupt than in Bos, and the declension very gradual until near the loins (at 10th Vertebra), whence to level of loins very sudden indeed, giving the animal an appearance of disproportioned smallness in its hinder extremities. In Bisonus the rise from the neck is most abrupt, and confined as in Bos to the shoulders, or rather entirely to the withers, whence the droop is more gradual and uniform than in Bibos, but less so than in Bos.

In detail these appearances arise from the following state of spinous process. In Bos the first spinous process is only 2-3ds the length of the 2nd. In Bibos the 1st spine is to 2nd as 7 to 8. In Bisonus the 1st spine (dorsal) is of extraordinary length and only perceptibly shorter than 2nd one, which is the longest of all, whereas in Bos and Bibos the 3rd is the longest.

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*Summary of Osteological Characters as noted above.*

*Bos.*—Dorsal Vertebrae and Ribs 13; Lumbar Vertebrae 6; Ribs laterally bulging from the sixth pair giving great expansion of costal region;

transverse processes of Lumbar Vertebrae long and strong, spinous process of this not specially developed: the 3rd Dorsal Vertebra the longest, whence a gradual and uniform shortening of spinous processes to 10th, which is not longer than those of Lumbar, Metacarpal bone (Canon) long, ditto Metatarsus, forehead flat, nasal bones obtusely arched; facial portion of skull (all below the orbits) longer than in Bibos, shorter than in Bisonus, or Bubalus, in which longest of all. Intercornual space scarcely arched; skull less massive than in Bibos, more so than in Bisonus; Postcal aspect of skull square and smaller compared to forehead (all above orbits) than in Bisonus, greatly so than in Bibos.

*Bibos*.—Skull deep, broad, and very massive, an elevated massive and protruding intercornual crest, overhanging the forehead nasal bones, longitudinally arched (especially in the male), giving along with the protruding intercornual crest, a hollow appearance to the forehead. Postcal aspect of skull as extensive as the forehead. Horns of great thickness, short and invested over their intermediate crest. Ribs and Dorsal Vertebrae 13; Lumbar 6; lateral processes of Lumbar, less developed than in Bos, more so than in Bisonus. Ribs laterally bulging as in Bos—if any difference less so. Metacarpus (Canon bone) and Metatarsus shorter than in Bos, longer than in Bisonus. Spinous ridge greatly developed both in altitude and in extent—the processes continuing of great length to the 11th. They exceed those in Bos, even in a greater degree, than the massiveness of skull and horns would indicate.

*Bisonus*.—Dorsal Vertebrae and Ribs 14—Lumbar 5—Ribs straight, and costal cavity compressed and cervine compared with Bos and Bibos. Spinous ridge greatly developed anteriorly, but less protracted in extent and declining (from 3d spinous process) more abruptly than in Bibos. Skull less massive than in Bos or Bibos, facial portion longer and more finely tapering. Superior portion of forehead transversely arched. Intercornual space centrally elevated, viewed anteriorly, this portion is a truncated cone, postcal aspect of skull triangular, more extensive than in Bos, but greatly less so than in Bibos. Metatarsus and Metacarpus, shorter than in Bibos or Bos.

*Remarks*.—The character of the limbs in Bos, indicate the greatest degree of locomotive speed, and the development of the Lumbar region, promises the greatest burden-bearing power. The cervine character of costal region in Bisonus may, in locomotive energy compensate the longer canon bone, and Metatarsus of Bos, nor is it improbable, that the additional pair of ribs in the same animal, by adding to his length of barrel and shortness of loins, may compensate to him the greater indications of strength in the Lumbar region of Bos.

P. S.—Since writing the above I have seen the skulls of a male and female Gayal from Sylhet. The face is flat, the intercornual space is flush as in Bos; the horns are somewhat triangular at their base, tapering to a sharp point, dark green, about  $4\frac{1}{2}$  feet apart at the apices, and laterally diverging from their base. The Gayal, Mr. Hodgson informs me, has 13 Ribs: its head it indisputably Bovine, much more so than in Bibos.

A. C.\*

*Part II. Craniology of Bibos, Bison and Bubalus, the subjects of examination being the Gouri Gao, the Gayal, the Yak and the Arna.*

Adverting to the annexed table of admeasurements, I proceed to remark upon the several skulls:

*Dimensions and weight of the skulls and horns of Bibos Cavifrons (1), Bos Garçeus (2), Bisonus Poephagus or the Yak (3), and Bubalus Arna (4), Common Domestic Bull of Nepal (5), 6, 7 fem of 1 and 2.*

	1.	2.	3.	4.	5.	6.	7.
Length from Symph: intermax: to crown of forehead, .....	1 10 $\frac{1}{2}$	1 7 $\frac{1}{2}$	1 7 0	1 11 $\frac{1}{2}$	1 5 0	1 8 $\frac{1}{2}$	0 5 $\frac{1}{2}$
Greatest height, .....	1 3 $\frac{1}{2}$	1 1 0	0 9 $\frac{1}{2}$	1 2 0	0 9 $\frac{1}{2}$	1 0 $\frac{1}{2}$	1 0 0
Greatest width of frontals between the orbits, ....	0 11 0	0 10 0	0 9 0	0 8 $\frac{1}{2}$	0 7 $\frac{1}{2}$	0 8 $\frac{1}{2}$	0 8 $\frac{1}{2}$
Least ditto ditto, .....	0 8 $\frac{1}{2}$	0 7 $\frac{1}{2}$	0 7 0	0 6 0	0 6 $\frac{1}{2}$	0 6 $\frac{1}{2}$	0 6 $\frac{1}{2}$
Greatest width of frontals, between antea and inferior bases of horns, ....	1 2 0	1 1 $\frac{1}{2}$	0 10 0	0 10 0	0 7 $\frac{1}{2}$	0 11 $\frac{1}{2}$	0 1 0
Height or length of postea plane of skull from lower edge of foram: condyles to crest of forehead, ....	0 11 0	0 8 0	0 6 0	0 8 0	0 5 $\frac{1}{2}$	less 0 9 0	less 0 7 0
Length of frontals from line drawn through mid orbits to crest of forehead, .....	0 9 $\frac{1}{2}$	0 8 $\frac{1}{2}$	0 6 $\frac{1}{2}$	0 7 $\frac{1}{2}$	0 6 $\frac{1}{2}$	0 8 $\frac{1}{2}$	0 7 $\frac{1}{2}$
Length of Nasals, .....	0 10 0	0 6 $\frac{1}{2}$	0 7 $\frac{1}{2}$	0 10 $\frac{1}{2}$	0 7 0	0 8 $\frac{2}{8}$	0 5 $\frac{1}{2}$
Greatest breadth at Muzzle (intermaxill:) .....	0 4 $\frac{1}{2}$	0 3 $\frac{1}{2}$	0 3 $\frac{1}{2}$	0 4 $\frac{1}{2}$	0 3 $\frac{1}{2}$	0 3 $\frac{1}{2}$	0 3 $\frac{1}{2}$
Diameter of orbits, .....	0 2 $\frac{1}{2}$	0 2 $\frac{1}{2}$	0 2 $\frac{1}{2}$	0 2 $\frac{1}{2}$	0 2 $\frac{1}{2}$	0 2 $\frac{1}{2}$	0 2 $\frac{1}{2}$
Symphysis of intermaxill: to inferior edge of the orbits, .....	0 11 $\frac{1}{2}$	0 10 0	1 0 0	1 2 0	0 10 0	0 11 0	0 9 $\frac{1}{2}$
Thence to bases of horn, ...	0 6 0	0 5 $\frac{1}{2}$	0 4 $\frac{1}{2}$	0 5 0	0 5 $\frac{1}{2}$	0 6 $\frac{1}{2}$	0 5 $\frac{1}{2}$
Basal circuit of the horns, ...	1 6 $\frac{1}{2}$	1 5 0	0 10 $\frac{1}{2}$	1 7 0	0 8 $\frac{1}{2}$	1 1 0	1 1 0
Terminal interval of horns, ...	1 8 0	2 10 $\frac{1}{2}$	1 3 $\frac{1}{2}$	1 9 0	1 7 0	0 8 0	1 9 0
Greatest interval of ditto, ...	2 1 $\frac{1}{2}$	2 10 $\frac{1}{2}$	1 7 0	3 0 0	1 7 0	1 3 $\frac{1}{2}$	1 9 0
Length of horns greatest by outer curve, .....	1 10 0	1 8 0	1 5 0	4 4 0	0 9 $\frac{1}{2}$	1 5 0	1 3 0
Weight of skulls and horns, ...	30 lbs. 8 oz.	17 8 0	15 8 0	27 0 0	9 $\frac{1}{2}$ lbs.	15 $\frac{1}{4}$ lbs.	10 $\frac{1}{4}$ lbs.
Length of face from Symph: intermaxill: to lower edge of orbits, .....	0 11 $\frac{1}{2}$	0 9 $\frac{1}{2}$	0 11 $\frac{1}{2}$	1 2 $\frac{1}{2}$	0 10 0	0 0 0	0 0 0
Length of forehead from lower edge of orbits to crown of frontals, .....	0 11 $\frac{1}{2}$	0 9 0	0 7 $\frac{1}{2}$	0 9 $\frac{1}{2}$	0 8 0	0 0 0	0 0 0

\* These initials indicate the work of Dr. Campbell of Darjeeling, formerly my assistant, and who was kind enough to afford me his aid on this, as on various other occasions.

The prime characteristics of No. 1, or the skull of the Gouri, are enormous size, (above a third greater than that of the ox); more than proportionate massiveness or weight (being treble that of the ox); and lastly, great breadth, without marked deficiency of correspondent height or length. The greatest width of the frontals, between the extreme bases of the horns, is to the length as 14 to  $9\frac{1}{2}$ ; but the greatest width between the extreme margins of the orbits is to the length only as 11 to  $9\frac{2}{3}$ . At first sight the frontals, *exclusive of their crest*, look flat; but they are really somewhat concave, and that, as well across between the very salient orbits, as longitudinally between the arched nasals, and the commencement of their own crest. That crest is most remarkable: it occupies the whole breadth of the bases of the horns and ascends nearly 2 inches above them, in a bold transverse arch. From the plane of the forehead it rises with a slight declination backwards, has a round edge on the crest, and thence falls perpendicularly upon the parallel plane of the occiput of which it constitutes (with the entirely merged parietes) above one half. The postcal plate of the skull thus becomes of an extreme size, being in depth to the lower edge of the condyles of the great foramen, longer or deeper, than the antecal plane of the frontals, great as the latter is. Another feature of the postcal plane is the very deep indentation of the temporal fossæ, which cut half in two the superior, pseudo-occipital or cristate, and the inferior or truly occipital portions of the postcal plane.

Of the trigonal ridge, which, in the Bisons, bounds superiorly the parietals, there is no trace, and very little of the true transverse ridge of the occiput which commonly limits the parietes inferiorly. With regard to shape, the occipital plane is neither square or semi-circular, but rather! if you *exclude* the interruption made by the temporal fossæ, spheroidal between the incurved salient alæ of the condyles below, and the bold transverse arcuation of the crest above; and if you *include* that interruption, bi-elliptic or composed of two oblate rounded figures of an ovoid or elliptical outline, and lying, one above the other, transversely to the skull, the upper or pseudo-occipital portion being the larger. The facial portion of the skull is equal in length to the frontal portion: the orbits are very salient and cervine, with rapid contraction of the head's breadth before them towards the nasals, which are of ample length and exhibit an arched form both lengthwise and across. The breadth of the intermaxillaries is moderate, in the position of the muzzle, which in the living animal is small; and though the nasals are produced much to the front, yet the lateral solution of continuity in the bones towards the malars

(the intermaxillaries not reaching the bones of the nose at all) is ample; and this, with the convexity of those bones, leaves abundant space for the olfactory apparatus. Other peculiarities of this skull, are, that the rami of the lower jaws are but slightly bent in comparison to those of *Bos*; and that their condyles as well as those of the foramen magnum have a lower than ordinary position. The horns, of very moderate length, and gradually attenuated from a very thick base, occupy the extreme ends of the frontal crest, filling its breadth but not ascending within two inches of its greatest height. Their direction is towards the sides with a slight uniform ascending and retiring curve, which brings the points back about half way to the bases with a direction suited to their junction over the neck, though, in males especially, the distance between the points always remains great. The horns are upon the whole rounded, but with considerable oblique depression towards the massive bases, so that their breadth is greater by  $\frac{1}{3}$  than their depth, and the anterior surface sharper or narrower than the posterior one, the greatest surfaces being (in a horizontal position of the skull) towards the zenith and nadir. The result is a subtrigonal or ovoid section at the base, where in old animals there are externally several heavy wrinkles: the colour is horn green with black tips.

No. 2, which is the half reclaimed stock of *Gavæus* vel *Bos sylhetanus*, is likewise a large skull, not above a 6th less than the preceding in dimensions of extent, but scarcely exceeding half of the weight of it, the bones being far less massive and also smooth on the surface. Here again we have signal length and breadth in the frontal region, both rapidly diminishing in the relatively contracted facial, so that the distance between the small fine muzzle and the eyes exceeds not that between the latter point and the summit of the head. In the precedent skull, the same proportion was observed. But in the profile of the present there are none of the curved lines, so noticeable in the last —no frontal crest, no saliency in the orbits, and no arcuation in the length of the nasals, which are, besides, as well comparatively as positively short, whence the interval, between their points, and those of the intermaxillaries is much greater than in the last; though, as in it, these bones are entirely disconnected by the intervention of the malars. The greatest width of the frontals, at the two points before indicated, is to their length as 13 and 10 to  $8\frac{1}{2}$ . These are dimensions and proportions pretty similar to the last, and exhibit a comparative breadth not found in the common types of *Bos*, with which however the present skull agrees in the perfect flatness and rectilinearity of its frontals,

owing to the non-saliency of the orbits and to the straightness of the culmenal line drawn between the bases of the horns. There is a further essential agreement with *Bos* and disagreement with the last, in the circumstance of the horns being inserted on the summit of the frontals, which however, as in the last are carried high up between the horns and thence dropt perpendicularly upon the parallel plane of the occiput, of which they constitute with the entirely merged parietes, not indeed a half as in *Bos*, but a very material portion, almost  $\frac{2}{3}$ th. The postcal plane of the skull is consequently of dimensions inferior only to those of the last but superior to those of the occipital surface in *Bos* or *Bubalus* or *Bisonus*. In the present subject its depth or length is not far from equal to that of the frontal plane, large as the latter is; and as in the last temporal fossæ make a deep indentation upon it, though not so deep as in *Bibos* nor so centrally placed in respect to the height or depth of the plane. This indentation in both skulls marks by its position the extent of the false and true portions of the occipital plane, or that composed of the frontals and the parietals, and that composed of the occipital bones inclusive of those of the foramen and its condyles. In *Bibos* the former portion is equal, and more than equal to the latter, and the indentation is consequently central; in the present animal the proportions of the two parts are as 2 to 3 and consequently the indentation is supercentral. This indentation likewise, as already noted is much less deeply cut, though more so than in the more ordinary types of *Bos*; in which latter, however, the false occiput, so characteristic of these 2 skulls (*Gouri* and *Gayal*), cannot be said to exist; nor is there in *Bos* proper any sign of the trigonal ridge defining the course of the parietes *superiorly* in the *Bisons* and in them only. The transverse ridge bounding the parietes *inferiorly* is defined in this skull (*Gayal*) about as distinctly as in *Bibos* and in *Bos*. In point of shape the postcal plane of the present subject represents in its upper portion a vague transversely laid parallelogram, and in its lower, an oblate sphere—of which two the proportionate size has been already stated as 2 to 3. But, if we take no heed of the indentation of the temporal fossæ and moreover consider (as *Cuvier* always does) the *base* of the plane as *rectilinear*, the figure of the plane may be called square. In the common *Ox* this indentation is *really* almost obsolete: but in both *Ox* and *Yak*, as in the *Bibos* also, the basal line is arched downwards. The culmenal line is arched, (upwards) only in the *Gouri* or *Bibos* and in the *Bisontine Yak*. The angle formed by the postcal with the antecal plane of the skull of the *Gayal* is very acute and in fact a right angle as in *Bos* and *Bibos*. The non-saliency of the

orbits and the straightness, longitudinally viewed, of the nasals, have been already noticed. In these respects, as in the lesser compression of the lachrymal and malar bones, the present skull agrees with that of the common Ox; but the intermaxillaries are narrower at their extremity, and the nasal bones are shorter in proportion to them, and to all the other dimensions indeed, than in the common Ox. In the narrowness of the muzzle (intermax:) there is a point of affinity with *Bibos*: and with regard to the bend of the rami of the lower jaws and to the position (high or low) of their condyles, as well as those of the foramen magnum, the skull exhibits a mixed character composed half of *Bibos* and of *Bos*. Duvancel erroneously I think stated to Cuvier that the Gayal species in the wild state have no proper dorsal ridge. Dr. Buchanon, however, asserted, of the reclaimed race, that the true ridge is present but short in extent, not extending over more than a third of the back. I cannot decide that essential point: but I know that the Cayal has only 13 pairs of ribs; and from the characters of the skull, I deduce a confirmation of H. Smith's opinion that the animal is an osculent species, as I should say of *Bos* or of *Bibos* according as it has, or has not the true dorsal ridge. The horns are placed at the ends of the highest part of the frontals, a large portion of which on both surfaces of the skull they cover or flank rather with their thick bases. Towards the bases they exhibit several wrinkles, but are smooth upwards and rapidly attenuated to the blunt points; as in *Bibos* the horns are subtrigonal and depressed the broadest faces (in the horizontal position of the head) being the superior and inferior, the next so, the postæal, and least broad, the antæal. The depression is even more distinct than in *Bibos*, but still the section is, upon the whole, ovoid. The horns are directed outwards with a slight inclination backward and upward, and hardly any curvature so that their divergency is exteme. The colour is wholly black, and this as well as the very moderate curve of the horns, and their position upon the summit of the perfectly flat frontals, may be used as decisive criteria to distinguish the spoils from those of *Bibos* or No. 1. In the females of *Bibos* the frontal crest, though less conspicuous than in the males, is ever present, and may be marked at once by the arched line passing between the *highest* bases of the horns, which it transcends in the middle—and by the depression of the frontals between their *lowest* bases. The skulls too of *Govæus* are from a half to a third smaller, taking weight and dimensions together. In the females of *Bibos* the horns are so much bent that the tips are as near as the bases, and pointed directly at each other just behind the nape. I proceed now to No. 3 or the Chowry Bull of Tibet which has 14 pairs of ribs and a strong dorsal ridge, though

limited in extent to the withers ; and which is therefore justly considered to belong to the Bisontine group, though it be perhaps an aberrant or osculant species more connected by some of the characters of its skull with the Bubalines than with the Taurines. The distinctive characters of this skull are moderate size and weight, dimensions of length more preponderant (from increase in the facial region) over those of breadth, and more specially of height, than in either of the foregone or even in the common Ox ; and, lastly, frontals distinctly though trivially convex in the upper part, whence they pass with a somewhat obtuse angle into a semi-circular or rather trigonal occipital plane of very moderate size. The excess in length of the facial over the frontal portion of the skull is as 11 to 7. The greatest width of the frontals at the two points before named is to their length as 10 and 9 respectively to  $6\frac{1}{2}$  : but as, owing to the higher position of the orbits, the nasals do not really extend upwards beyond a line drawn across *anteal* the edge of the orbits, the proper proportion of length to breadth of frontals is really about  $7\frac{1}{2}$  to  $9\frac{1}{2}$ . This is an excess of proportionate width by no means exceeding that of the preceding examples, nay rather falling short of their proportionate breadth, It, however, exceeds the proportion in the common Ox, whose frontals, measured in the way just suggested and for the same reasons, are only as broad as long, and that equally whether we take the breadth between the orbits or between the bases of the horns. At first sight the frontals seem flat, owing to the elevation of the orbits ; but they are effectually, and especially in the upper part, arched, as well across as longwise, so as to lessen the angle made with the occipital plane which is of moderate size, and composed entirely of the true occipital and parietal bones. These bones, delimited by a continuous ridge, whose apex constitutes at once the summit of the frontal crest and of the occipital plane, constitute the latter a right angled triangle, defined laterally (below the parietals) by the temporal fossæ and lambdoid crest, and basally by an imaginary straight line drawn transversely through the condyles of the foramen magnum. The indentation of the temporal fossæ upon the occipital plane, though larger than in the domestic Ox, is far less than in either of the preceding species ; and, as it is drawn much upwards close under the horns, the occipital trigon is uninterrupted ; as, for a similar reason, is the occipital *square* of the Ox, whose parietes, however, are merged, as in the Gouri and Gayal, though placed as high as in the Yak. Owing to this merging and to the absence of transverse arcuration in the frontal ridge line, the occipital plane in the Ox becomes square ; whereas, owing to the boldly defined and pointed parietal ridge, and to the rounding off of

the frontals on either side of it, the same plane in the Yak becomes trigonal—or where the parietal ridge is more obscure and the rounded off and transversely arched ridge line of the frontals is made to define the occipital plane superiorly—semicircular; the *base* being *always* considered a *straight* line. There is a strong tendency, no doubt towards the Bubaline skull in the Yak, and not merely in the round and sloped off frontals as as above noticed, but also in the great extent of the facial portion of the skull, and in the very small curve of the rami of the lower jaw. Towards Bibos again there is an inclination in the transverse intercornual arch though it be vague, in the salient orbits, and in the longitudinal arcuation of the nasals, as well as in the large lateral vacuity towards the molars. The intermaxillaries cease considerably short of the nasals and the two sets of bones are consequently wholly unconnected, more so even than in the Gouri or Gayal. The nasals are no way deficient in length; yet is the interval between their anteaal extremities and those of the intermaxillaries more signal than in the Gouri, the Gayal, or even the Arna in which last the nasals are at a maximum of developement so as to be connected with the intermaxillaries for a considerable extent—a circumstance sometimes observable to a less extent in the skulls of the common Ox. In the living Bison or Yak the muzzle is small as in Bibos, but I cannot say I clearly trace the symptoms of this in any unusually narrowness of the intermaxillaries at their symphysis. Upon the whole the skull of the Yak as compared with that of the common Ox, is larger in proportion to the size of the animals, and exceeds the Bovine skull as much in breadth as it falls short of it in depth or height. These are characters of *depression* and are no where else so noticeable as in Bibos (excluding the crest) whence the skulls of both come further to agree in the common inclination towards straight lower jaws lowly articulated. But in the length of the facial portion of the skull as compared to the frontal and consequent high position of the orbits, and in the tendency of the rounded frontals to slope off easily towards the occipital plane, the Yak's skull differs antipodally from that of Bibos, approaching in the same degree to the Bubaline cranium. Of all the skulls now before us the position of the orbits is highest (longitudinally viewed) in the Arna or wild buffalæ, and lowest in the wild Gouri or Bibos; in the Yak its position is most analogous to that it holds in the common Ox. In regard to saliency of the orbits, there is the strongest resemblance between the Bison and Bibos—none of the others showing the least tendency that way. The horns of the yak, of moderate size, jetty black, rounded and smooth occupy, as usual, the ends of the frontal

apex having the frontal bones somewhat arched between them as well transversedly as lengthwise, though the evenness of the arcuation both ways be somewhat broken by the saliency of the apex of the parietes, which apex shows itself palpably on the central point of the crown of the forehead sometimes rising a little above and in rear of the cases of the horns. The horns are directed at first outwards, and then reverted upwards and backwards with a bold curve, which often leaves the points not remoter than the bases, in which case the points will tend towards the crown of the withers, or if less curved, directly backwards and parallelly.

I proceed now to No. 4 or the Bubaline skull, the most signal characters of which are elongation or preponderance of length over both width and depth, the very large proportion of that length borne by the facial portion in comparison of the frontal or cerebral, and the easy rounded slope by which the clearly convex frontals pass into the occipital plane. In regard however to the last named characters there is considerable diversity of degree found in different skulls, those which have the horns directed most backwards from and at their bases being most signal for the confluent rotundity of the frontals and parietals (in some almost as noticeable as in our own heads) and those which have the horns directly least backwards, being least so. Massiveness and size are no doubt further characteristics of the Bubaline skull; but characters in which it will bear no comparison, at least in regard to weight with that of Bibos, though the vast size of the Arna's horns will sometimes approximate the weight of both skull *and horns* to that of the skull and horns of Bibos. The Arna or type of Bubalus has 13 pair of ribs and no trace of the dorsal ridge of Bibos and of Bison, the ridge line being perfectly straight in the living animal from the nape to the root of the tail. The Arna is one third larger than the finest domestic breeds of buffaloe, and, like the wild type of Bibos, is distinguished for a short tail reaching only to the hocks. The limbs are much less fine than in the other Bovines, the body longer in proportion to its height, and the habits quite different, leading the animals perpetually to wallow in mud and water. Mais revenons a nos ossements. The length of the facial portion of the skull compared with that of the frontal is as 15 to 10 nearly. The greatest width of the frontals at the two points before indicated is to their length as 10 and  $8\frac{1}{2}$  respectively to  $7\frac{1}{2}$ . The frontals in fact are both short and narrow, and they are invariably more or less, and generally markedly, convex, as well transversely between the unsalient orbits as lengthwise from behind the orbits to the occiput. The

more arched the forehead the obtuser the angle formed with the occipital plane and the more distinctly do a portion of the frontals and all the parietal go to form a part of that plane. In such cases the pseudo-occipital portion of the postcal plane is very noticeable constituting nearly one half of its whole depth and representing a transverse ovoid figure or oblate spheroid bounded above by the vaguely defined crown of the frontals, and below by the rather deep indentations of the temporal fossæ connected by any imaginary line. But usually, and whenever the frontals are not very much curved in their length, the pseudo-occipital portion of the postcal plane of the skull is trivial in depth, and defined above by a nearly straight line between the ends of the horns—the rest of the postcal plane constituting a second and less depressed sphere, defined above by the course of the true occipital ridge, and nearly excluding the parietal trigon so strongly marked in the last or the Bison of Tibet, but here wholly unmarked, the bone itself being utterly merged in the frontals.

In point of size the postcal plane of the skull, though moderate on the whole, is yet usually larger than in the Ox or in the Yak, but far inferior in extent to what is seen in Bibos—most nearly resembling the proportion and figure too in the Gayal. The nasals, molars and intermaxillaries are extremely developed longitudinally, so that the orbits are nearly twice as far from the symphysis intermaxill. as from the crown of the frontals. These bones have no proportionate breadth so that the face is narrow as well as long, except at the symphysis of the intermaxillaries where the dilation of the bones clearly indicates the broad massive muzzle of the live animal. The intermaxillaries intervene between the molars and nasals for 2 to 3 inches: the nasals are not at all arched and are well produced to the front so that the nasal cavity is upon the whole small, though somewhat increased by the lateral dilatation of the intermaxillaries in the region of the muzzle. The deficient width of the skull is indicated by the close position of the rami of the lower jaw, and its moderate height or depth, by their small curvature, though in the last particulars of deficient depth and consequent straightness of the lower jaws, the Yak's skull is pre-eminent. The horns of the Arna are signally remarkable for size, for horizontality, and for depression: their thickness is not so remarkable as their length and their tendency backwards parallelly to the plane of the face with bold lateral single curves (to the sides neither sinking nor rising) and more or less of divergency. Their length is sometimes enormous and there is a clear distinction between the breeds with the longer and less divergent, and

those with the shorter and more divergent horns. The horns are inserted typically at the ends of the frontal line which usually lies evenly between them, but is sometimes arched. They are so much depressed that the width is more than double of the depth, and the depression being at the same time oblique, the outer or anteal side presents a considerable flat surface, while the inner or posteaal one shows an edge only. The horns are therefore strictly triangular and that invariably so, 4 or 5 inches only at the points being rounded, and there only the horns are smooth, the rest of the surface being covered with close transverse wrinkles or rugae.

With regard to the skulls of the domestic Ox and those of the females of the Gouri and the Gayal, I will not fatigue the reader by any separate remarks on them. They have been sufficiently mentioned incidentally.

General dimensions, aspect and external characters of the Gouri Gao, the Arna and the Yak.

(1) Gouri Gao,	(2) Arna or wild Buffaloe.		
	(1)	(2)	
Nape to root tail, straight.....	7 6 $\frac{1}{2}$	7 9 0	
Height at shoulder ditto.....	5 8 0	5 4 $\frac{1}{2}$	
Ditto at croup ditto.....	5 0 0	5 5 $\frac{3}{4}$	
Depth of chest ditto.....	3 1 $\frac{1}{2}$	3 0 $\frac{1}{2}$	
Girth behind shoulder .....	8 7 0	8 6 0	
Fore leg to line of Chest .....	2 3 0	2 4 0	
Tail only.....	2 7 $\frac{1}{2}$	2 9 0	
Tail and tuft .....	2 9 0	2 11 0	
Head, length from nape to snout along the curve	} 2 10 $\frac{1}{2}$	2 8 $\frac{1}{2}$	
Diitto straight, snout to crown forehead.	1 10 $\frac{1}{2}$	1 10 $\frac{1}{2}$	
Ditto ditto Snout to fore angle of eye..	1 0 0	1 2 0	
Thence to nearest base of horn . . . .	0 5 $\frac{3}{4}$	0 4 $\frac{1}{2}$	
Depth of head, greatest from crest of forehead to edge jaw.....	} 1 4 $\frac{1}{4}$	1 1 0	
Breadth of forehead, greatest above or- bits.....	} 0 11 $\frac{2}{3}$	0 9 $\frac{2}{3}$	
Length of ditto from line of upper edge of orbits to crest of head . . . .	} 0 11 $\frac{1}{2}$	0 8 $\frac{1}{2}$	
Length of ears.....	0 10 $\frac{1}{2}$	0 11 $\frac{1}{2}$	
Greatest width of.....	0 6 $\frac{1}{2}$	0 0 0	
Length of fore hoof .....	0 6 0	0 7 $\frac{1}{4}$	
Greatest breadth of ditto.....	0 4 $\frac{3}{4}$	0 7 0	

Length of hind hoof.....	0	5	0		0	6	$\frac{3}{4}$
Greatest breadth of ditto.....	0	4	0		0	5	$\frac{3}{4}$
Horns length outside curoge....	1	9	0		4	6	0
Terminal interval of tips.....	1	9	0		1	9	$\frac{1}{2}$
Nearest basal interval postea.....	0	7	0	ant	—	6	0
Remotest basal interval antea.....	1	1	$\frac{1}{2}$	post	1	0	0
Weight of scull and horns.....	32	lbs			30	lbs.	
Girth of horns at base.....	1	6	$\frac{1}{4}$		1	8	0

*Character of the heads with their integuments.*

GOURI GAU. The head is large and massive with great breadth and depth rapidly diminishing towards the gape where the ample lips and muzzle cause it to swell again : the straightness of facial line is slightly interrupted by the arcuation of the chaffron, even before you reach that light point where the frontals commence to make their huge curved sweep towards the occiput. The crest of this sweep is about  $1\frac{1}{2}$  inch above the horns ; its antea base  $5\frac{1}{2}$ , and its postea,  $2\frac{1}{2}$  above the proximate planes, fore and aft. Its form is almost cylindric between the bases of the horns which occupy its ends entirely, and pass behind it on the dorsal surface ; muzzle of small size for a taurine animal and somewhat indented curvately on superior edge instead of running straight across between tops of nares ; nares broad, lunate and oblique : upper lip full, laxly applied to head, and falling over lower lip which has a small beard : both lips near the gape have large soft pointed and recurved papillæ. The 8 incisors below, which are ranged in a small arch with broad nearly level crowns, are quite moveable in the gums : the chaffron is of medial length and boldly convexed lengthwise and across : the forehead is long, broad and flat, till the arched sweep between the horns commences at 7 inches from the extreme antea base of forehead or a line drawn across the antea points of orbits : From *this* line to the crest of forehead there is a length exactly equal to the greatest breadth between the orbits, which is at their postea salient angles. From the great length and breadth of the forehead result the low position and great separation of the eyes. The interval between them across the top of the chaffron is one foot by the natural curve ; and the distance from their anterior canthurs to the nearest base of the horn is  $5\frac{1}{4}$  inches. In the Arna the same interval is but  $8\frac{1}{2}$  ; and the same distance, but 3. The ears are of ample size and spread greatly towards the tips, the shape being somewhat ovoid ; from anterior edge of helix proceed some long hairs, and the lower margin is indented by short striæ of closer hairs which run all round its edge :

the rest of the interior is nude ; the auditory orifice is at the very bottom of the ears, small and round, and protected on the antea side by a process equivalent to the tragus, but wholly internal above this a short transverse bilobate process defining the upper line of the small and vague concha, and having a deep inclination above it answering to the lower ridge of the antihelix and scapha respectively.

The eyes are rather small, oblique, full with oblong oblique pupil and large soft lashes to upper lid. The horns are very remote, short thick, directed nearly outwards and a little backwards with the tips recurved inwards and backwards. They have a very broad base passing gradually into skin and postea secreting and nude. They are depressed and subtriangular, the broadest faces being the superior and inferior, and the third of the triangle, the postea face : the antea is reduced to an obtusely rounded edge merely : the trigonal form gradually gives way upwards, and the recurves are conic, ending in a sharp point : two or three heavy rugæ near base : rest of horn very smooth and glossy : colour pale green with black points. As already noted, the horns lie  $1\frac{1}{2}$  inch below the crest of the forehead ; but a portion of their base passes a good way *behind* that crest, which ends on the occipital surface of the head in a small segment of a circle, below which the plane of the occiput is quite and falls perpendicularly on the nape with a clear dip of several inches wholly unoccupied by the muscular attachments of the neck.

The hoofs in the living animal are not spread, but rather compressed, with the flat sides of the cleft nearly touching. The sole is flat, rounded, softish, and ascending postea towards the false hoofs which are considerably developed and conical, the fore hoofs larger than the hind : the neck short thick, and sunk between the frontal and dorsal crests the shoulders and trunk very massive and deep, being surmounted by an elevated dorsal ridge conterminous with the ribs : the hind limbs and croup lower and feebler ; the barrel tapering ventrally towards the hind legs : limbs low, stout, fine ; tail hardly reaching the hocks, slender, cylindeco-tapered, closely haired and ending in a full tuft. The hide is exceedingly thick : the hair close, glossy and of one sort only, though the specimen be a mature male killed in mid winter. On the forehead, on the chin, and thence to the chest (along the abdominal aspect of neck) and on the fronts of the limbs below the central flexures, and there only, is the hair a little elongated and slightly waved or curled ; but only slightly and every where else the coat is short, straight and applied. The hairs of the tail tuft also are coarse, a little elongated.

There are 4 teats plainly developed and running in two lines on either

side the scrotum before it begins to depend : a fifth is bastard and irregular. The colour of the animal is black : but the forehead, the whole limbs below the central flexures, the edge of the upper lip and the chin are dirty yellow white : the scrotum, and insides of thighs near it, tan colour : insides of fore legs near body, or sides of chest, also paled and yellow grey : internal nude parts of lip and palate, fleshy white : insides of ears, ruddy fleshy.

**BUFFALOE WILD.** The head is as long as the Gouri's but not so massive. Its entire facial line is straight : the forehead is much shorter and narrower and convexed across. By reason of the shortness of the frontal bones, the eyes are more raised and much nearer to the horns. In proportion as the frontals are shortened, the nasals (or chaffron) are elongated, giving the head a narrower longer look. The frontals are not raised above the superior edge of the horns, and they pass with a gentle curve to the occiput : Ears larger, narrower and more pointed : muzzle larger and squared between superior edges of the nostrils, which have a longitudinal direction not obliquely across, as in the Gouri. The whole animal is clearly in make longer than the Gouri but not more massive on the whole, more so in the hind quarters, less so in the fore. The back is quite straight without osseous crest or fleshy hump, and the neck and head are in line with it : the tail as short as in the Gouri : skin nearly as thick. The Gouri has more massiveness in the head and shoulders, and its chest is quite as deep or deeper, but the barrel and croup both follow much behind. As the Gouri stands at ease, the crown of his forehead is as high as the crest of his shoulders ; but there is a deep fall between the two, and the back has a long and pretty equable slope from the withers to the croup where there is a sudden droop. The limbs are shorter but as strong though less gross than in Arna, and the hoofs are smaller and less spread : tail similar in both : Ears shorter broader and less drooped in the Gouri Gau. The Arna is longer and higher on the whole ; is equally strong fore and aft ; and the line of the back is quite straight from the head to the tail. Both have the knees and forehead tufted : but the Gouri is uniformly and fully clad in short Bovine soft hair, while the Arna has its head, neck, chest, shoulders and greater part of its body above, scantily dressed in bristly hair, and the rest of the skin, more or less denuded.

*June 1.*—FÆTUS IN UTERO OF GOURI GAU. Snout to rump 16 inches. Height at shoulder 1<sup>0</sup>, at croup 9½. Head (straight) from snout to frontal ridge, 5. Tail 4, is probably not above 3 months old, nude, fleshy

red, with yellow hoops; is a female. 13 Pairs of ribs, 7 true and 6 false per side: dorsal vertebræ 13: Lumbar 6: (Ilium in fœtus joined only to one sacral vertebra) alias, ossa ilii jointed with 1st sacral vertebra only. Hollow of sacrum formed of three. In all 4 sacral: caudal 16: cervical 7: Spinous process of the 7th but moderately raised, process of 1st dorsal twice as long as 2nd and 3rd dorsals, gradually increasing: 4th to 8th nearly equal and longest: 9th 10th about length of 2 3: 11 to 13 gradually falling off; spinous process of lumbar not noticeably larger but broader than those of dorsal. Dorsals: Dorsal vertebræ 13: Spine of dentale vertebræ rather large. The general contour of the head from nose to occiput presents an equable arch in all its length, the frontals having no transverse dip, and but a moderate crest passing backwards with a broad quiet swell: frontals 2, divided longitudinally: 2 parietals occupying the sides of the head, contributing to the full uniform swell of superior surface and indented postally in a triangular shape, which indentation is filled by the anteal portion of the occipital, and is still on superior surface of the skull. This triangular occipital bone is bounded below, by the transverse suture, and here the fall towards the postal surface of the cranium begins. The second, or true occipital bone, bearing the crest is shaped differently. The others are two for the codyles, and one for the cuneiform process.

This young is a female, and probably therefore as well as on account of its imperfect state, the head shews nothing of the transverse depression or of the huge crest, characterising the frontals of mature male. Kidneys, as in Bos, oblong and multilobular, Intestines 20 feet, of thin uniform diameter. Cæcum  $1\frac{1}{2}$  inch long, and 36 inches from end; its diameter and that of gut below it, rather plus that of the small guts. Stomach 8 inches long; length between orifices, 5—from Cardiac to funders, 3; peculiar formation vaguely traceable; great paunch largest; next solvent, rather less.

June 20.—MOTHER OF ABOVE, FROM SAUL FOREST. Snout to rump nine feet. Height before 5 feet. Tail 2 feet one inch. All essential characters and the aspect, of mas, but smaller considerably and dorsal and frontal crests less developed. Colours identical.

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*Yak, Bisonus Paphagus, male, mature, July 12.*

Nape to root tail (straight), .....	5	6	0
Height at shoulder, .....	4	2	0
Ditto at croup, .....	3	6	0

Depth of chest, .....	2	6	0
Girth behind shoulder, .....	5	10	0
Foreleg from rest to elbow, .....	1	10	$\frac{1}{2}$
Hindleg from ditto to true knee, .....	2	4	$\frac{1}{2}$
Tail only, .....	1	3	$\frac{1}{2}$
Tail and hair, .....	2	10	0
Head, from nape to snout (curve), .....	1	11	0
Ditto from snout to top frontals (straight), .....	1	8	0
Snout to fore angle of eye, .....	1	1	0
Thence to nearest base horn, .....	0	4	$\frac{1}{4}$
Greatest depth of head frontal crest to lower edge of jaw, .....	0	11	0
Ditto width ditto, .....	0	9	$\frac{1}{2}$
Ear's length, .....	0	5	$\frac{1}{4}$
Ditto maximum width, .....	0	2	$\frac{3}{8}$
Length of fore hoof (rest), .....	0	4	$\frac{1}{4}$
Greatest breadth of ditto, .....	0	3	$\frac{3}{4}$
Length of hind ditto, .....	0	4	0
Greatest breadth of ditto, .....	0	3	$\frac{1}{2}$

4 teats narrowing wedgwise backwards. Whole of perineum, scrotum, inside thighs and hypogastric region, from anus to prepuce, nude; skin, white. Hair along superior edge of whole of above nudity forming a long fringe with a very definite margin: nudity carried *partially* forward from prepuce to end of sternum with accompanying fringe; and armpits quite bare.

Head largish: facial line straight: muzzle vague and small: nares oblique; eye medial and with brown iris: ears small, oval, horizontal: Dorsal ridge true, elevate, abrupt, confined to withers: limbs very short, sufficiently fine. Barrel deep and compressed. Tail (true) very short, tapered, reaching only to mid buttock. Hoofs and false hoofs much scooped below: the latter, also large. The small guts are 107 feet, mean diameter,  $1\frac{1}{2}$  inch: diameter for 19 inches from pylorus, 2 inches: cœcum 2 feet 3 inches, not saccid: max. diam. 4 inches. Ditto at entrance of small gut, 3 ditto at blind end, 2: Large gut 33 feet 4 inches: mean diam. 2 inches; for 18 inches from cœcum, diameter 3 inches, diam. of rectum, 2: spleen 22 inch by 4, of uniform diam.; ends rounded, weight  $1\frac{1}{2}$  lb.; kidneys lobulated greatly;  $6\frac{1}{2}$  long by  $2\frac{3}{4}$  of equable diam: weight of each 10 oz. Liver one great lobe, with 9 small lobuli on lower surface, white without, gamboge when cut into, and full of tubercles: gall-bladder 5 inch. by 4, of uniform width, attached to costal margin of liver which is 7 lb. weight.

Length of 4th stomach 1-10 shape of a bottle with a neck of 4 inches long and  $2\frac{1}{4}$  in diameter; above which is an oval dilatation 5 inch in diameter, coarsely rugose internally, and with glandular looking bodies between its inner and outer coats, diameter of pyloric orifice itself,  $1\frac{1}{2}$  inch; basal width of 4th stomach, 10 inch: 3d stomach, round, 10 inch of diameter: 2d stomach sporran-shaped or hemispheroidal, 10 inch long by  $7\frac{1}{2}$  of diameter: 1st stomach, quite round, 27 inch in diameter. Bladder, as spread, 3 by 7 inch. Depth of sternal cavity, or thorax, 20 inch: from ensiform to spine, width between 11th pair of ribs,  $20\frac{1}{2}$ . Lungs—right 4 divisions and much the largest, one is the lowest of them—left, 3; lowest largest: another central one from the right, under apex of heart, very small—8 lobes in all. Larynx ringed only in front. Heart 11 inch by  $6\frac{1}{2}$  of greatest diameter. Diameter of larynx at branchial division, 3 inches. Thoracic viscera, 14 lbs. Heart with pericardium, 3 lbs. 3 oz.

Another Yak, alive, head large with round forehead and straight facial line; eye full; muzzle moderate; ears small and rounded; body full; limbs low; large, abrupt, sloping ridge occupying the hind  $\frac{1}{2}$  of the neck and fore  $\frac{1}{2}$  of back, Dewlap none.

Nape to rump, .....	6	1
Height a fore, .....	4	3
Ditto a hind, .....	3	6
Fore leg (from body), .....	1	5

Tongue white and strongly aculeated, processes corneous, pointed and inclined back in fore part, flattened and level and larger towards root of organ.

In concluding these tedious, but in the present state of science, indispensable details, we may be permitted to enquire whether they suggest or lead to any general principles or facts? Whether, for instance, they justify our separation of the Gouri Gao as a distinct type among the Bovinæ? and whether, as well with reference to the introduction of this new form as to the obvious vagueness characterising the extant definitions of the other forms, these details suggest no feasible improvements upon those definitions?

Both these questions may I think be fairly and usefully answered in the affirmative and I shall terminate this paper with the following improved indications of the principal Genera or groups of the Bovinæ.

Bos. Cranium moderate, proportional or without excess in the cerebral or facial region: frontals shorter than the face, flat and not broader than long. Occipital plane of the skull quadrangular, never arched along the culmenal line, nor indented by the temporal fossæ; smaller much

than the frontal plane and forming an acute angle therewith: Horns attached to the highest line of the forehead, rounded, moderate, curved up or down or forward: 13 pairs of ribs: no true dorsal ridge, but sometimes a fleshy hump: dewlap and muzzle large and square.

Type. *Bos domesticus*.

*Bibos*. Cranium large, massive, exhibiting preponderance of the frontal and cerebral portions over the facial: frontals as long as the face, concave, broader than long, and surmounted by a large salient crest ascending above the highest bases of the horns. Occipital plane of the skull spheroidal, very large, larger than the frontal plane, deeply indented in its centre by the temporal fossæ and forming an acute angle with the frontal plane. Horns attached below the highest line of the frontals, massive but short, ovoid or subtrigonal, and curving ascendantly: 13 pairs of ribs: a true dorsal ridge coextensive with the ribs and terminating abruptly: Dewlap and muzzle small; period of gestation longer than in *Bos*.

Type, *Bibos Cavifrons*.

N. B. *Gavæus* an aberrant species leading to *Bos*?

*Bison*. Cranium moderate, depressed, inclining to Bubaline forms in the excess of the facial portion over the frontal, and in the rounding off of the frontals into the occiput: frontals decidedly broader than long, more or less convex, and forming an obtuse angle with the semicircular or trigonal occipital plane, which is strongly ridged by the parietes at its summit, is smaller than the frontal plane, and moderately indented. Horns attached rather in advance of the parietal apex of the Cranium, small, rounded, curving ascendantly, or out of the horizontal: 14 (or 15) pairs of ribs; a true dorsal ridge but confined to the withers and terminating postally in a gradual slope: Dewlap and muzzle small.

Types, *B. Americus*, et *Poephagus*.

*Bubalus*. Cranium large, elongate compressed or narrow, disproportional exhibiting great excess (a 3d) of the facial over the frontal or cerebral portion: frontals short, narrow, convex, usually forming an obtuse angle with the occipital plane, which is large and circular in proportion to the obtuseness of that angle and to the consequent arcuation of the culmenal line of separation: Parietals merged, not ridged as in the last, nor culmenal. Horns attached to the ends of the highest line of the skull, always exceeding in length that of the Cranium, and usually greatly so depressed, strictly trigonal and neither ascending nor descending but directed horizontally backwards: thirteen pairs of ribs: no true dorsal ridge nor fleshy hump: muzzle large and square: Dewlap medial.

Type *Bubalus Arna. fæm. Arnee*.

Cuvier first divided the Bovinæ into subordinate groups, as usual with him employing only craniological characters. H. Smith has since added to Cuvier's the osteological characters of the *carcase*—the number of ribs and the all important dorsal ridge. I have only more consistently and thoroughly applied these principles at the same time rejecting several palpably false or trivial diagnostics; and having said thus much for my suggested definitions I now leave them to the discretion of the expert. Though I have thought it expedient for the present to consider the *Bos Gavæus* vel *Sylhetanus* (Gayal) as an aberrant species rather than as the type of a new form, I have not failed to remark how singularly, were it regarded in the former light, the entire series might be made to exemplify the quinary and circular system. If we dispose the five supposed types thus. *Bibos*, *Bison*, *Bubalus*, *Bos*, *Gavæus*, we shall find the circularity of the series in many respects very curious and complete. Thus, looking to the crania alone, *Bibos* is connected with *Bison* by broad frontals, salient orbits, and other quasi cervine attributes. *Bison*, with *Bubalus* by the prolongation of the facial part of the skull, and the easy rotund transition from the frontal to the occipital plane. *Bubalus* with *Bos* by comparatively narrow frontals and broad square muzzle. *Bos* with *Gavæus* by flatness of frontals and the acute angle they form with the occipital plane. *Gavæus* with *Bibos* by great width of frontals and increased extent, and peculiar characters of the occipital plane as well as by contraction of the muzzle; the acute angle of the two planes of the skull being still maintained.

If again we pass from a consideration of the crania to that of that osteological carcasses, in regard to that most important feature the osseous dorsal ridge, we shall find this ridge at its maximum of development in height and extent in *Bibos*; next diminished in extent in *Bison*, but not in height; lost in *Bubalus*; tending to reappear in *Bos*; and clearly resumed (as is alleged) in *Gavæus*, and in that peculiar shape too which is so highly developed in *Bibos*.

The above indications of circularity in a complete series of five forms are at all events curious and calculated to stimulate further observation. They have therefore been thus mentioned and should future inquiry tend to confirm the conjectured importance of *Gavæus*, it will be but the work of a few minutes to characterise this species as a distinct type.

B. H. HODGSON.

*Valley of Nepal, April, 1841.*



*Comparison view of the Skulls of the Sygal or Bos Garous of the Green Gan of Nepal.  
 a Buteo Lurepans and of the Pak of Tibet, or Bismus Tephugus. Fig. 1 2 3 respectively*





*Bubalus Arna* The Arna or Wild Buffalo of India





WALLACE

*Bibos Gayensis* The Gaur (Gaur) Wild Bull of the Indian Forests



*On the Geology, &c. &c. of Hunumkoondah (H. H. the Nizam's Territory) by DR. WALKER, Madras Army, continued.*

The route from Hunumkoondah to Pakhall, lies almost due east. The intervening country is on the whole less hilly than that left behind as far as this place, when a chain of low flattened hills, covered with trees, and shrubs, is observed to extend in a direction from N to S, and is lost in the horizon at both points. The black soil becomes more abundant, no longer occupying mere patches, but forming tracts of considerable extent, and here it may be noted that to an eye at all accustomed to observe this country with reference to its vegetation, an open treeless plain suggests at once the prevalence of the regur soil; for with the exception of the *Butea Frondosa* (Palas), which here, and there appears, there is scarce a tree that affects it, while on the red soils care and industry can alone prevent high jungle from springing up. The granite continues the only surface rock until Sarapore, near which there is an out cropping of sandstone, granite however, re-appears, and may be observed near the road leading from that village to the lake at the crossing of the first stream, but in this neighbourhood it is soon lost in sandstone, which as far as I have remarked forms the masses composing the hills abovementioned. This rock is of various degrees of hardness; it is sometimes of such a dense crystalline structure, as to possess the qualities and appearance of quartz rock; at others the arenaceous form is distinctly visible; the stratification also is of great variety; at certain points the layers are so thick, massive, and irregular, as to resemble unstratified rock; at others the strata are not thicker than a quarter of an inch, and are disposed in parallel layers. This last appearance is particularly well marked at the Chubootra of Shetab Khan, where the rock looks more like a schist than a sandstone. No specimen I have yet met with of the rock effervesces with acids, and the only earthy minerals that it appears to contain are fragments of red jasper, and chalcedony approaching to flint. I have not seen these in situ, but think it probable that they form with the rock a conglomerate. Dr. Voysey speaking of the sandstone rock of the Nizam's territory states 'in no instance have I seen the sandstone stratified,' by which it is clear he could not have been at this place; it is likely that beds of oxydulous iron are to be met with here; I draw this conclusion from the fact of the sandstone being in some cases distinctly encrusted with thin layers of this mineral, and also from the point of junction of two rocks being the locality where metallic minerals are most frequently met with. This

Pakhall tank (for the name of lake, is scarcely in accordance with its artificial embankment) is a fine sheet of water, and takes precedence of all the tanks in Telingana, both as to depth and extent of surface. It is at least thirty miles in circuit when quite full, and besides affording a deep and copious stream for the purposes of irrigation, sends a tributary to the Kistnah, which even at this season of the year merits the name of a small river; it is bounded on three sides by low hills covered with wood, and although the vegetation is now, parched and burnt up, picturesque beauty is by no means wanting to the landscape; immediately after the rains it is quite conceivable that it may vie in scenery with the better known and much lauded Italian Lakes; considering its extent, its value is small, for its whole circumference to some depth is occupied by a dense jungle, and fifteen hundred bigahs under cultivation from its irrigation are but slender tribute to the chief of tanks; the situation is said to be unhealthy, for at least eight months of the year, which may account in part for its thinly peopled neighbourhood.

The draught and carriage bullocks met with appear strong and hardy; they are not equal in symmetry or size to those of Guzerat, or the Ellichpore part of Berar, but very similar to the Malwah animal, to the strength and vigour of which they probably come up; they are usually of a white colour, and are much sought after by the Bunjarries. The method of breeding and rearing these animals would be deemed singularly judicious, did not the necessity of the care, which forces the proprietors into the best mode of management, take from it all merit. The cows from which they are bred are allowed to roam about the jungles in a half wild state, with a few keepers nearly as wild as themselves to tend and occasionally milk them. These possess many of the habits of the wild cattle of South America, and also of the remnants of that aboriginal race still kept in a few British preserves, such as combining for mutual defence, and attacking by the whole herd rushing on in a body; they guide rather than follow their herdsman, who wisely enough suffer them to choose their pasture ground by that instinct which domestication blunts without annihilating. In a dry year they congregate in great numbers around this tank, from all parts of the country, during the months of April and May, for the pasturage which at that period in the less extensive jungles fails them.

It is evident that no better means could be devised for keeping up a vigorous and serviceable race of bullocks than this treatment of the cows.

In addition to the cultivated plants mentioned in my first letter a small quantity of sugar-cane has been lately added to the list, and with some success ; it is unnecessary to say that the expression and boiling of the juice are conducted in the same manner that these operations are performed throughout India from the Himalaya to the Cape Comorin, and that the compound of sugar, molasses, earthy matter and other impurities, ' called *good* is the result. A Sugar Mill, wood, carpenter's work and all costs from five to six rupers. The fixed state of the industry of Asiatics cannot find a more fit illustration than in the management of their Sugar Cane. For at least two thousand years, for of that period we have record, that the same rough process has been gone through, the same amount of labour wasted rather than expended, and the step beyond their rude and economical preparation of sugar-candy (in which they have been completely distanced by the Chinese), has never been thought of. A follower of the School of Madame de Stael, who apportioned invention and suggestion to certain parallels of latitude, and improvement, and perfection without discovery to others, would point to the history of the manufacture of this necessary springing up in the South, but perfected by Northern skill as proof of their theory : but another estimate would refer this backwardness to improvement on the part of the Asiatic to that ever enduring insecurity of property which has taken from capital nearly all its power to stimulate or reward industry, from combination all its force, and from skill every disposition to suggest, far less improve.

It would be wandering far from the subject to enquire how this insecurity arose, and how it has been perpetuated, but deficiency of moral, much rather than intellectual energy has been at its root and accompanied its growth.

A very common plant grows on the black soil, chiefly in the jowarrie fields, the *Croton plicatum* mistaken by Burman, for the *Croton tinctorium* of the South of Europe, which plant it greatly resembles in properties and appearance. The *Croton tinctorium*, is cultivated in the South of France for its dye, the litmus or turnsole as it used to be called. Drs. Ainslie and Roxburgh have both suggested the employment of the *Croton plicatum* for this purpose ; acting on their opinion, I have extracted, by a simple infusion from the capsules of the plant, a dye having the peculiar properties of litmus, but have failed in purifying it from the extraneous substances contained in the aqueous solution. This is commonly done in Europe by fermentation and by admixture of some alkali, or alkaline earth, by which the blue violet, its peculiar colour, is maintained, but these means will not answer in a tropical country, where the great heat

causes the infusion to pass almost at once to the putrefactive fermentation, whereby the colour is vitiated or altogether discharged, a thing not likely to occur in the more temperate climate of Europe. I see that the same vitiation of colour of the Himalaya Archil, a litmus lichen, is complained of in the transactions of the last meeting of the Agricultural Society of Bengal, and I would recommend that a sufficient quantity of capsules of this plant (which I can readily supply) be sent to England there to be tested by superior Art, and under the more advantageous circumstance of a cooler temperature. The natives regard the plant as completely useless, and are even ignorant that the juice of the capsules gives a blue stain to cloth; I shall now give some account of the more useful trees and shrubs, all of which are found growing in the neighbouring jungles.

*Caryota Urens.* This stately palm is indigenous to these jungles, but from all I could hear is not to be met with in great abundance.

The soil would appear to suit it well, as one specimen I saw grew at least to the height of 60 feet. This is the sago palm of the interior as the other species which yield that article are either insular, or coast productions, which would in all probability perish if transplanted from the soil and climate they most affect. To those who have witnessed or even heard of the dreadful and unavoidable calamity of famine to which every well peopled tropical region is subject, any suggestion by which the horrors of that scourge may be averted or even mitigated must prove acceptable; a feasible means of doing this would appear to exist in propagating and carefully preserving these sago trees, and I cannot conceive a fitter purpose for the almost useless waters of this splendid tank, than their contributing to the inestimable end; for a preserve of these palms in its neighbourhood would not only be secured in a never failing supply of water, but the tree jungle with which it is surrounded would afford shade to the young plants, which, from the situation that they are found wild in, would seem requisite. Far be from me the wish to see a race of men palmivorous, for lotophagi and anthropophagi notwithstanding all that the poets have sung of the golden age, may on most occasions be made convertible terms without any violation of the truth, but the very nature of things precludes the supposition of the natives of India ever becoming so, as much as it does our painting ourselves with wood or worshipping the mistletoe. As to the fitness of the food for the support of life during famine, I subjoin the statement of Dr. Roxburgh, who must have been an eye witness of the facts related. 'The pith or farinaceous part of the trunk of old trees, is said to be equal to the

best sago, the natives make it into bread and boil it into thick gruel ; these form a great part of the diet of those people, and during the late famines they suffered little, while those trees lasted. I have reason to believe this substance to be highly nutritious. I have eaten the gruel, and think it fully as palatable as that made from the sago we get from the Malay countries.'

The fronds make a better cordage than those of the *Elate sylvestris* commonly used by the Coonbies.

The worst property of this palm is the only one with which the natives are familiar, the inexhaustible supply of Toddy which it yields.

*Butea Frondosa* (Palas) *Butea Superba*.

Both these, and especially the last, which is a magnificent climber with a trunk of the thickness of a man's body, yield the palas gum or East India kino as it has been called ; of this a specimen is sent. Dr. Royle has lately estimated the quantity of tannin, which this gum yields at no less than 50 per cent, two per cent more than that yielded by the Catechu of Bengal.

Tannin is the substance which, by combining with the gelatine of hides forms leather, and is that which gives to oak bark, Aleppo galls, Valonia, &c. their high commercial value. Although every second tree in this part of Telingana is the Palas, there is not one ounce of gum collected, being reckoned wholly useless and unprofitable by the natives.

I cannot help thinking that this production will soon be looked on as very valuable in the arts, should this happen, they will not be wanting a supply from Telingana, where both Buteas are so common.

Rohuna tree—*Swietenia Febrifuga*.

The bark of this tree is the well known febrifuge—On the authority of Dr. Ainslie, certainly very respectable—Dr. Lindley, in his valuable works has stated that given in large doses it is apt to produce nervous symptoms and hence objects to its use—does not the very same objection apply to *Cinchona* ?

Besides the evidence of any one physician on the febrifuge properties of a medicine is wholly insufficient, for what is so common as head affections in tropical fevers. With the permission of the resident, I shall send a parcel of the bark to the medical store-keeper of H. H. the Nizam's Army, that it may be sent to Britain for trial in the less bulky form of an extract.

*Wrightea Antidysenterica*.

The bark of this small tree is the once celebrated Conessi bark, it is said to have got into disuse from other inert barks being substituted for

it. I shall send also a parcel of this bark to the medical store-keeper. *Sterculia Urens*. It is said this tree yields a gum similar to the gum *Tragacanth* of commerce (Royle).

*Buchanania Latifolia* Chironge tree. The nut is used for all the purposes of the Almond by the natives, it would in all probability produce as good an oil as the almond.

*Chloroxylon Swietenia*, juice said to give a yellow dye. Of other useful trees here are *Nauclea Cordifolia*, *Mimosa Xylocarpa*, *Mimosa Serissa*, *Allangium Hexapetalum*, *Pentapteracoriacea*, *Dalbergia*, *Latifolia*; *Hibiscus populneus* *Terminalia Bellerica*, *Strychnos Nux Vomica*, and a species of *Gmelinu Ulmus integrifolia*, well adapted for furniture building, &c. all are in great abundance. The Teek *Tectona grandis* is stunted and worthless in these jungles, and the *Diospyrus Melanoxylon*—Black ebony, grows to no great size. Of the less useful trees are *Careya Arborea*, *Barringtonia acutangula* *Ixora parviflora*, *Ficus Comosa*, *Erythrina Suberosa*, &c. The principal shrubs consisted of the *Ochna squarrosa*, *Grewia orientalis*, *Symphorema involucrata*, *Gardenia Latifolia*, with fragrant beautiful flowers, *Trophis Aspera* and *Premna Tomentosa*. The climbing plants are chiefly the *Sifonia Nutans*, *Combretum Ovalifolium*, the *Ventilago Madraspatana* and the *Ola*.

The *Cissus Cornosa* and *Dalbergia Scandens* were also seen. The most common parasite was the *Loranthus scurrula* the *Bassia Latifolia*, Mowah tree was comparatively rare. Some trees were so utterly without leaf, or flower, that their names or value could not be conjectured but these were in no great number. The Herbaceous vegetation was completely burnt up.

#### *Note and Tabular Statement N. W. Frontier.*

The annexed statement (No. I.) will shew the enormous increase which has taken place in the Export trade to Cabool during the past year, aggregating on the three descriptions of produce no less than 38,08,873 rupees as compared with the preceding year.

Of the three denominations of exports, one only, being Country produce is prepared from Official records (chokie registers). No Account being taken at the customs chokies of free goods, I have been obliged to refer to the Merchants themselves for information as regards them, and they have obligingly allowed me access to their ledgers, from whence the amount of exports under the heads of 'British Manufactures and Productions,' and Sea Importations, has been ascertained, not in exact details, but sufficiently accurate to meet the object in view.

*Statement of Goods Exported via Delhi across the N. W. F. to Cabool, from 1st May 1833 to 30th April 1841.*

From 1st July 1833 to 30th April 1839.											From 1st May 1840 to 30th April 1841.										
NAMES OF GOODS		Quantity.	Invoice value.	Quantity.	Invoice value.	Increase in value	Decrease in value	Quantity.	Invoice value.	Increase or decrease in value as compared with 1833-39	Increase or decrease in value as compared with 1839-40.	REMARKS									
BRITISH MANUFACTURES AND PRODUCTIONS.																					
Long Cloth, bleached, 5,000 pieces	65,000	3,500 pieces	42,000	23,000	21,000	21,000 pieces	3,00,000	2,35,000	2,58,000	{ Unbleached Long Cloth is preferred to the bleached as it is more durable and admits more readily of being dyed blue, the favourite colour of the North. Flowered Muslins in high demand. The finest quality prices. Swatch samples eagerly bought up. This includes Coarse Chintzes also, which from the durability of the colour, are valued. Used chiefly for turbans. Coarse quality and suitable colours preferred. Very little used in Afghanistan proper, but great demand for Baluch, Bakhar, Khuzistan and Lahore markets. British Muslins, not only from the original superiority of the material but from the superior method of smelting, are in great demand throughout Asia.											
Do ditto, unbleached, 4,140 ditto	40,000	2,400 ditto	15,000	24,000	45,000 ditto	4,000 ditto	3,50,000	3,50,000	4,00,000												
Muslins, plain and flowered, 11,000 ditto	55,000	8,000 ditto	40,000	15,000	77,000 ditto	3,000 ditto	3,48,000	3,50,000	3,50,000												
Jacquet Muslins, 8,000 ditto	40,000	4,000 ditto	12,000	5,000	12,000 ditto	2,000 ditto	2,00,000	2,00,000	2,00,000												
Cambrics, 5,400 ditto	45,000	2,000 ditto	20,000	25,000 ditto	25,000 ditto	2,000 ditto	2,00,000	2,00,000	2,00,000												
Dimities, 4,000 ditto	30,000	3,000 ditto	27,000	9,000	28,000 ditto	2,500 ditto	2,10,000	2,25,000	2,25,000												
Handkerchief Pieces, 2,000 ditto	35,000	1,500 ditto	22,000	12,750	14,000 ditto	2,000 ditto	1,50,000	1,50,000	1,50,000												
Broad Cloth, 3,000 ditto	81,000	2,000 ditto	54,000	27,000	21,000 ditto	5,000 ditto	5,00,000	5,33,000	5,33,000												
Velvets, 400 ditto	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000												
Brass, Copper and food, 30 mds & 200 sheets	5,000	10 mds & 100 sheets	3,500	1,500	150 mds & 1,400 sheets	25,000	21,000	24,000	24,000												
Porter and Lead, 250 pigs	10,000	175 pigs	7,000	3,000	1,750 pigs	71,000	67,000	70,000	70,000												
Iron, &c. scales, 1,000	1,000	600	600	400	7,000	7,000	6,000	6,000	6,000												
Copper, Brass, Iron and Black Tin, 581 mds.	28,050	557 mds.	27,875	1,175	4,007 mds.	2,07,350	1,74,300	1,75,575	1,75,575												
Pots and Pans, 207 gross	2,430	11 gross	2,320	1,025	1412 gross	29,730	25,000	27,425	27,425												
Galley, Knives, Scissors, &c.	512 mds.	512 mds.	512 mds.	512 mds.	512 mds.	10,250	10,250	10,250	10,250												
White Lead, 800 scores	20,317	20,317	20,317	20,317	20,317	20,317	20,317	20,317	20,317												
Glass Ware, 5,111 gross	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000												
Hints, 1,600 mds.	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000												
Alum, 1,600 mds.	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000												
Total,	4,49,300	2,96,550	1,94,750	31,70,667	25,11,307	9,14,117															
SEA IMPORTATIONS via CALCUTTA AND BOMBAY																					
Spices, Drugs, &c., 25 mds.	700	18 mds	450	250	3,500 mds.	75,000	71,300	74,500	74,500	{ These are bought to Delhi from Bombay via Palee. They are originally imported from the Persian Gulf.											
Log Wood, 212 ditto	224	18 mds	450	250	2,400 ditto	21,000	22,150	22,800	22,800												
Ulmstone, 530 ditto	5,000	30 ditto	5,000	5,000	500 ditto	21,000	23,314	21,000	21,000												
Quicksilver, 30 ditto	5,000	30 ditto	5,000	5,000	320 ditto	4,800	4,800	4,800	4,800												
Plumstone, 53 mds.	65	600 mds.	3,000	47,000	10,000 ditto	3,50,000	3,00,000	3,17,000	3,17,000												
Sandal Woods, 10,000 mds.	50,000	600 mds.	3,000	47,000	2 mds.	2,000	2,000	2,000	2,000												
Brethrouse, 600 mds.	3,000	3,000	3,000	3,000	28,000 strings	3,500	3,500	3,500	3,500												
Corrosive Stone, 2 mds.	2	2	2	2																	
Mela or Boney Beads, 28,000 strings	3,500	3,500	3,500	3,500																	
Total,	50,092	3,450	47,042	4,95,780	4,44,788	4,02,330															
COUNTRY (INDIAN) PRODUCTIONS AND MANUFACTURES.																					
Piece Goods, Cotton, Silk, 49,926 pieces	85,500	29,923 pieces	82,658	2,874	1,60,932 pieces	2,78,501	1,92,950	1,93,873	1,93,873	{ The rich stuffs of India are very much admired, and the coarse ones cloth are preferred to those of the north, in consequence of their being woven with country and English yarn. Indigo is the only article of commerce which is not conveyed directly by the Cabool merchants. It is, in the first instance, conveyed by the Delhi merchants to Bawana and Amritsar, and from thence is exported to Cabool when it meets with a ready market. The quantities herein exhibited are not a fifth of what are actually exported from India, as within the last few years immense quantities have been raised West of the Jumna, especially at Munay major in Sirhind, the whole of which are carried to the northern marts; there is no possibility of ascertaining quantities correctly, but 5,000 mds. are assumed as the annual supply sent to Cabool; Indigo manufactured after the native manner is preferred to that produced by Europeans, both from cheapness and the facility of applying it in purpose of dyeing.											
Blankets and Resene Dooptins, 1,500 mds.	1,65,000	1,143 mds	1,21,703	39,237	2,105 mds	2,63,041	68,641	1,37,818	1,37,818												
Indigo, 1,500 mds.	1,65,000	1,143 mds	1,21,703	39,237	2,105 mds	2,63,041	68,641	1,37,818	1,37,818												
Shore, 934 pairs	545	1,712 pairs	905	360	4,404 pairs	2,182	1,617	1,277	1,277												
Spices, 15 mds.	842	1,712 pairs	905	360	8 mds.	283	1,617	253	253												
Crutch Kenase Gold and Silver, 1,014 tulahs	2,511	2,511	2,511	2,511	2,511	2,511	2,511	2,511	2,511												
Lace and Tissues, 72 pieces	821	821	821	821	821	821	821	821	821												
Embroidered Goods, 25 mds.	804	804	804	804	804	804	804	804	804												
Mirapora Carpits, 202 mds.	215	215	215	215	215	215	215	215	215												
Beclenuty, 20 ditto	240	240	240	240	240	240	240	240	240												
Cocunut Oil, 434	369	369	369	369	434	369	369	369	369												
Hules, Raw and Tanned, 100 pairs	300	300	300	300	100 pairs	300	300	300	300												
Leather Stockings, 100 pairs	300	300	300	300	72 mds.	585	585	585	585												
Wax Candles, 585	434	369	369	369	35 acres	90	90	90	90												
Vendigrease, 100 pairs	300	300	300	300	43 tulahs	129	129	129	129												
Amber, 100 pairs	300	300	300	300	3,300	135	132	132	132												
Cocunut, 35 mds.	90	90	90	90	582 mds.	190	190	190	190												
Wrought Iron, 43 tulahs	129	129	129	129	34 ditto	46	46	46	46												
Brown Sugar, 3,300	135	132	132	132	315 ditto	63	63	63	63												
Oil Seeds, 582 mds.	190	190	190	190	2	20	20	20	20												
Huskah Snakes, 35 mds.	90	90	90	90	24 mds	101	101	101	101												
Old Brass, 315 ditto	63	63	63	63	1 ditto	10	10	10	10												
Spikenard, 2	20	20	20	20	30 acres	15	15	15	15												
Pigments, 22 mds.	101	101	101	101	11 ditto	2	2	2	2												
Sandal Wood, 1 ditto	10	10	10	10	124 ditto	13	13	13	13												
Brimstone, 30 acres	15	15	15	15	194 mds.	131	137	137	137												
Gum, 11 ditto	2	2	2	2	35 acres	85	85	85	85												
Iron, 124 ditto	13	13	13	13	22 mds.	21	21	21	21												
Lark, 104 mds.	131	137	137	137	15 ditto	8	8	8	8												
Lubacco, 35 mds.	85	85	85	85																	
Total,	8,51,405	2,09,900	360	42,470	3,51,722	3,00,310	3,42,420														
Grand Total,	1,51,693	1,09,298	389	2,42,702	43,18,109	35,66,171	38,08,873														

Notes.—This statement being compiled from Official Returns and the Ledgers of the Delhi Merchants, as well as those of the Cabool Trade's Agents in Delhi, is considered to be tolerably correct, but, as much time would be taken up in calculating small numbers, the quantities and values of British Goods and Sea Importations are given in the rough, containing taken-in keep below the mark, in the end that no exaggerated idea of the extent of the Trade might be conveyed.  
The first increase in the exports of 1839-40 is attributed to the unsettled state of the North during the period.



I may as well mention, that previous to the occupation of Affghanistan by our Troops in 1833-39, the Exports from these Provinces were trifling to a degree, the returns for the Imports being for the most part sent back in specie. Within the last year or two, however, the demand for our Exports has so greatly increased, that instead of taking back specie, Hoondies to a very large amount are sent to Delhi from Cabool, to meet the deficit caused by the excess of Exports from these Provinces, over the Imports from Affghanistan. Some time last year one merchant sent us a single remittance, Hoondies on Delhi from Cabool for no less a sum than forty thousand rupees, to be invested in the purchase of British goods.

Formerly the whole of the Export trade with Cabool, was carried on by the fruit merchants, who merely took back a small portion of their returns in British manufactures. There are now, several highly respectable merchants wholly unconnected with these traders, who confine their operations to exporting, from our Provinces goods for which, at present, they are unable to find a return in kind.

As it shews how anxious they are to establish a return trade, I will mention, that more than one instance has been reported to me of Russian goods (principally hardware and spurious gold tissue) having been, brought across my frontier line, the packages having Moscow marked on them, these goods were however of so inferior a description as to be rejected by the natives whenever offered for sale. Indeed the cutlery was inferior to that made at Monghyr and in the Delhi Bazar.

In reply to your second question, as to whether I can do nothing to help the Cabool Merchants, I can only state, that I have done and am doing all in my power to encourage this enterprising and deserving class of men, in every way possible.

In the mean time, I would suggest that the first object of Government should be to open the route for trade, through the Khyber Pass, by obtaining from the intermediate states, some modification of their present system of duties, which press so hard on the merchant, as to drive him round by the circuitous route now taken, where they are subjected to exactions it is true, though less oppressive and vexatious in their nature than those in force in the Seik states.

P. S.—To shew the enterprising disposition of the Cabool Merchants, I will mention that a short time ago I gave one of them a note to Mr. Clarke, to aid him in his endeavour to take an investment of Indigo, Jewellery, Gold Lace, &c. to Yarkund.

*On the 'Electro-type.'*—BY CHARLES HUFFNAGLE, ESQ.

REFERENCES TO THE PLATE.

- |                                    |  |
|------------------------------------|--|
| 1. Wooden cell.                    | 5. Copper plate, on which coin is placed.                          |
| 2. Glass cylinder.                 | 6. Zinc plate on acid liquid.                                      |
| 3. Brass binding-screw.            | 7. Crystals of sulphate of copper to keep up a saturated solution. |
| 4. Shelf perforated in the centre. |  |

MY DEAR TORRENS,—I felt gratified, at our last meeting, to find you were also much pleased with the fac-simile of my coin of 'Alexander' by the Voltatype, and I cheerfully promised at your desire an account of the process, for which, and also for the successful result of the experiment, I am indebted to my talented friend Professor O'Shaughnessy. I believe detailed accounts have already appeared in print, but this mode of copying coins and medals is so exceedingly *simple*—the result so surprising and satisfactory, and it is so fully in the power of every body disposed to devote the slightest attention to it—that we cannot make it too widely known.

1st. You must provide yourself with a wooden cell 8 or 10 inches square—with an inside coating of sealing wax—or other cement to render it water tight. This box should be 3 inches deep, with a ledge 1 inch from the top to support a wooden shelf.

Affix to the edge of the box a brass binding-piece, formed of square brass, perforated with two holes and furnished with binding-screws.

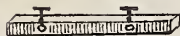
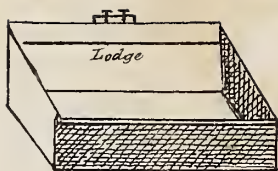
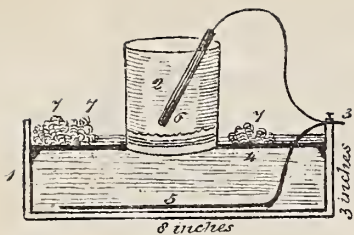
2d. A glass cylinder open at both ends, to the lower end of which a piece of *moist bladder* must be secured with a *waxed cord*, and the diameter of this cylinder must correspond with the perforation in the shelf fitted to the square box.

3rd. Plates of *sheet zinc* amalgamated by mercury; i. e., by rubbing a few globules of mercury over the zinc, after dipping it into a mixture of one part of sulphuric acid and one of water, must also be provided; and these plates corresponding in length and breadth to the size of the cylinder, must be attached to a *copper wire* 6 or 8 inches long.

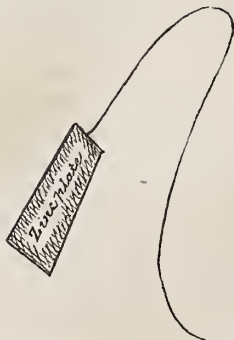
4th. A *plate of copper* 3 or 4 inches square with a copper wire 6 inches long.

5th. Supplies of sulphate of copper in crystals, and concentrated sulphuric acid.

When you proceed to use the apparatus, prepare a saturated solution of the blue salt, in soft hot water, strain it off turbid and allow it to cool—



Cylinder





prepare a dilute acid with one part of concentrated sulphuric acid and a pint of water.

Brighten the *copper plate* and place the coin to be copied thereon, then apply a coating of bees-wax over all parts of this plate and wire, allowing the surface of the medal you wish to copy, to be the only surface exposed.

Place the plate so that it shall rest flat upon the bottom of the cell—fill this with the solution of sulphate of copper to within half an inch of the top—fix in the shelf, and over the perforation place the cylinder, charged with the dilute acid. Into the acid introduce the zinc plate, and now let the wire of this as well as that of the plate of copper be inserted into the *brass 'binding-piece.'*

[The coin should be previously warmed—wax rubbed over the side we wish to copy and then the wax while warm rubbed off carefully with a soft rag. Lumps of sulphate of copper must also be placed upon the shelf in order to keep the solution in a saturated state.]

In twenty-four hours a reverse impression of your coin will be deposited, to remove which, take the coin from the copper plate, and warm it over a spirit lamp for a few seconds, then introduce the edge of an ivory knife, and you will be able to detach the copper deposit with ease. You have now only to substitute *this mould* as in the first step for the coin, and you will have your 'fac-simile.'

Here then you have the account you wished for, in which, recollect, I don't claim the least *originality*.

Yours very truly,

CHARLES HUFFNAGLE.

9th June, 1841.

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*Roree in Khypoor; its Population and Manufactures.*—By CAPT. G. E. WESTMACOTT, 37th Regiment Bengal N. I.

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(Continued from page 415.)

There were four paper factories in the town of Roree in 1839, worked alternately by men who had learnt the craft from their master Jhoora, the principal manufacturer, who receives two anas a day from each apprentice. The finest paper he produces is inferior in quality to that of Delhi and Agra; it is made entirely of old hempen rope and string, brought from Hyderabad in lower Sind, and sells in Roree at  $6\frac{1}{2}$  rupees a *mun*; the consumption is very limited and it forms no part of the regu-

lar imports of Roree. The manufacturer draws his supplies from time to time from Motoo, a *suhokar* of Noushuhra, who also supplies the factories of Khyrpoor and Shikarpoor. The *suhokar* is exempted by government from taxation, in consequence of services rendered by his ancestor to the Talpoor family of Khyrpoor, who resided, I believe, at the town of Noushuhra belonging to Meer Roostum, before they acquired sovereign power; this of course enables the *suhokar* to sell hemp at a cheap rate and gives him almost a monopoly of the trade.

The hemp is chopped on a plank, with a knife, into small pieces, and thrown into a washing vat one yard square, and half the depth, coated with mortar. It holds three seers of lime and two of *khār* (impure alkali), with water contained in five or six earthen pots; the manufacturer does not measure the water and is ignorant of the quantity required, but a pot contains usually ten seers, and when very foul and sandy it is purified with alum.

The hemp is washed, bleached, and macerated in the vat, and after being shaped into cakes and masses of all sizes, is put in the sun to dry; it is thrown afterwards into a pit to reduce it to pulp. The pit is five feet long, four feet broad, and three feet deep, paved with large stones and half of it nearest the bottom lined with stone. The tow is pounded half as long again in winter as it is in summer; in the latter season the shreds are more easily divided and macerated. Two or three men work the machine by placing one foot on a lever (F.) nine feet long, connected with a hammer (E) (see plate Fig. 4, No. 113) half the length, and the other foot on a bank of earth (B.) along side it, four feet long and eight inches high. They support themselves on a transverse rest six feet long (A.), or by grasping loops of ropes suspended from the timbers of the shop roof. The lever is kept in its place by stakes and a groove, and a transverse beam seven feet long (C.) prevents it rising above a certain level. The labour of working the pedal is extremely fatiguing in the hot months; a man sits in the pit (D.) during the operation of pounding the tow, to separate and moisten it occasionally with water, and pushes it under the hammer; this is usually done by the master; twelve hours labour are required to reduce to pulp a seer of tow, but a larger quantity is generally prepared at one time. The tow is taken from the pit in flat cakes and masses of the pulp weighing fifteen or sixteen pounds, and piled on stones in the sun to dry; afterwards it is thrown into another vat four feet square and two feet deep, lined throughout with mortar, and, after being diluted to a proper consistency with water, is separated with the hand and stirred two hours, and left about nine hours in the

vat. It is then dipped up by the workman on a light wooden frame or mould of seven bars, on which a mat (*boora*) is laid of the size of the intended sheets, made of *sur* (the stem of *moonj* grass) split into extremely fine pieces and united with horse hair.

The man sits on the edge of the vat, and is often provided with a pipe with a long tube, to which he applies his mouth from time to time without staying his work. He regulates the number of dips of the mould accordingly as he wishes to give consistency to the paper, always taking care to stir the liquor well before he raises it. He transfers the sheet, as soon as formed, to another frame of fine reed, which is placed upon one of *sirkee* (the upper stem of *moonj* grass,) carefully laying sheet upon sheet as he takes them from the vat, without the interposition of cloth of any kind, and leaves them about nine hours to drain; the sheets are then pressed under a plank, upon which two men stand for an hour. Those made during the day are pasted at night against a mud wall made smooth with clay and cow dung, and the men use for the purpose soft brushes of *moonj* grass ten inches long, which they prepare themselves. The paper is removed in the morning to a plank or board, where it is rubbed with a cotton cloth dipped in wheat flour, and suspended on hempen strings raised on sticks in a yard for twelve hours until perfectly dry; it is then carried back to the board and put into the hands of the polisher, who does not belong to the factory: he rubs it with a large smooth stone to give it a glaze or polish. Some of the stones are black basalt from Khorasan, and appear to have been rounded by the torrents; and smooth pieces of limestone and white marble are also used. On the completion of this process, the rough edges of the paper are cut with large scissors, like those used by tailors, and it is now ready for sale in the bazar.

On my second visit to this factory I found the work stopped in consequence of the men having gone to the British camp at Sukur, where they were employed in other labour at eight pys (four pence) a day. Until the establishment of our camp, there was a small consumption of paper, and it is by no means a profitable occupation; Jhoora could not afford to employ men above half a day at a time, and their labour in the factory was more severe than that exacted from them in the cantonment. The manufacturer (Jhoora) employs four men (Moosulmans), at ten pys ( $4\frac{3}{4}$ ) each per diem, to sweep the building, chop hemp, bring water from the Indus, and conduct the whole process of manufacture. He estimated the cost of his shop and machinery at 100 rupees, and the pit in which the tow is beaten at half the sum, but was not positive as his father built it. It is a large sum, but I do not question his veracity, as he did not over-

value other parts of the machinery; the large stone at the bottom of the pit took twenty men to lift it, and this, and other large stones at the bottom and sides of the pit, were brought from a long distance.

Rs. A. P.

Pit, .....	50	0	0
Two vats lined and terraced at the edges with two <i>muns</i> of mortar, .....	10	0	0
Wooden lever ( <i>Talee</i> F.) and hammer, E. ....	10	0	0
This is exclusive of seven seers of iron fastened to the bottom of the hammer which cost, .....	7	0	0
Transverse beam (C.) and supports, .....	2	0	0
The beam (A.) and its two supports, .....	1	0	0
The shop which holds the three vats and machinery, .....	5	0	0

The shop was a kind of shed, open at the sides and measured twenty-four feet in length and eleven in width. Two sides were walled in with boughs of the date tree, and the roof was mat and reeds upheld by wooden posts. Neither mud nor bricks were used in the construction.

Six frames or moulds of fir wood measuring 23 inches in length and 20 in width, for raising the stuff from the cistern, at 6 anas each, .....

.....	2	4	0
Three fine mats of split reed 23 inches long bound together by horse hair to place on the frames, at 6 anas each, .....	1	2	0
Sirkee mat to receive the sheets, .....	0	0	2
Board on which the paper is polished, .....	0	4	0
Polishing stone, .....	0	2	0
* Earth pot ( <i>muttee</i> ) to contain a <i>mun</i> of water, .....	0	3	0
Two earth pots ( <i>dillee</i> ) containing each ten seers, .....	0	0	4
Thirty strings to hang paper on, .....	0	4	0
Pair of scissors for cutting paper, .....	1	0	0
Chopper ( <i>koolharee</i> ) to chop hemp, containing half a seer of iron, .....	1	0	0

Rs. 91 5 0

I need hardly observe the fine texture of paper depends on the hemp being well beaten, and the number of dippings required to form a sheet depends a good deal on the vatman's dexterity in raising the stuff; sometimes five and six dippings are necessary. Hemp is pounded four days

\* Earth pots are dear at Roree, and there are only two potters in the town.

to form fine paper, and three days to form a coarse kind, 18 or 20 days are required to convert a *mun* of hemp rope into paper, which gives sixty large quires of twenty four sheets to a quire, each measuring 22 inches by 18; or one hundred small quires measuring 20 inches by 12; supposing the assertion of the manufacturer to be true, that to convert a *mun* of rope into paper costs him twenty rupees, he derives a profit of 25 rupees.

	Rs.	A.	P.
One <i>mun</i> of hempen rope to make paper of the best quality, ..	6	8	0
Wages of Workmen, .....	9	8	0
Lime at 50 seers per rupee, .....	0	1	0
Two seers of khar (alkali) at 1 pys per seer, ..	0	0	2
Polishing 60 quires at 1 ana per quire, ..	3	12	0
Alum, .....	0	1	0

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Rs. 19 14 2

The manufacturer sells a quire of large paper of the best quality when polished at 12 anas, and unpolished at 10 anas; sixty quires at 12 anas per quire give Rs. 45.

Five quires of paper made in another factory, sold for a rupee, and were the produce of three and four layers of stuff; the machinery and apparatus were similar to those I have described, but not so expensive, and the manufacturer had less capital than his neighbour. The pounding pit had a single stone at the bottom over the spot where the hammer descended, the rest of it was covered with planks to prevent the stuff mixing with earth, and the sides faced with brick; the pounding pit, hammer, and shed, cost together 80 rupees.

There was only one reservoir lined with mortar measuring nearly two feet square and  $2\frac{1}{2}$  feet deep, into which the stuff was thrown after it was removed from the beating pit;

	Rs.	A.	P.
It cost, .....	5	0	0
The branch frame for taking up the stuff, .....	0	8	0
Fine mat to place upon the frame, .....	0	4	0
Board on which the paper is polished, .....	0	6	0
The shop which held the vat, .....	32	0	0
Lever, Hammer, and supports, .....	21	0	0
Pit, .....	18	0	0
Polishing stone, earth pots, and strings, .....	0	8	0
Scissors and chopper, .....	2	0	0

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Rs. 79 10 0

The shop measured eleven feet in length and seven in width. The walls were sun baked brick, and timber interlaced with tamarisk boughs, the interstices filled with mud, and the roof of timber covered with reeds and clay.

The factor paid four workmen from six to ten pys a day (three pence or five pence), but did not employ them regularly; the vat man who raised the pulp worked only half the day, as his labour is very constant and tiresome, and received two anas (three pence.) The factor does not weigh the tow as he considers it would bring ill-success on his work, and throws into the pit any quantity that is cut.

Roree receives silk from Persia, and from Bokhara and other parts of Toorkistan. During the war between Shah Shoojah and Dost Mahomed Khan in 1833, the supply was stopped six or eight months and the weavers out of employ. The invasion of Affghanistan by the British eight years afterwards, interrupted commerce by the route of Kandahar and the Bolan Pass, but did not interfere with the supply of silk from Cabool which was, on the contrary, in excess of the quantity imported the preceding years, and came as usual, on camels *viâ* Peshawur, Dera Ismail, Mooltan, and Bahawalpooor.

A single hand silk loom can be established in Roree for 4 rupees, or about 8 shillings English. I annex a list of tools and their cost :

Rs. A. P.

A Spinning Wheel, .....	1	4	0
Rods of Surkunda reed passed through the warp to preserve the shape or lease, cut in the wilds.			
The pit or workshop, three feet long, two feet wide, and two feet deep, dug by the weavers.			
The cloth-beam or breast roll, a square beam of <i>talee</i> wood three feet long, placed over the pit and to which the ends of the warp are fastened, .....	0	8	0
<i>Kite.</i> Two upright posts six inches high which support the breast roll and in which it revolves, .....	0	0	4
Handle (phirnee) to turn the breast roll, .....	0	0	1
<i>Sundulee.</i> Two sticks attached to the breast-roll to which the warps are fixed, .....	0	0	2
<i>Hutha.</i> The lay cap $2\frac{1}{2}$ feet long, .....	0	8	0
<i>Phirnee.</i> 'The reed' a sort of comb of split Surkunda reed between which the warp passes, .....	0	1	0
<i>Dootna.</i> Two painted and varnished rollers forming part of the heddles to which the loom is fixed and suspended from the shop roof, .....	0	0	2

<i>Ruchee</i> . Four thin sticks set upright and connected by cotton threads and forming part of the heddles, .....	0	4	0
Cotton threads to form the heddles for suspending the <i>ruchee</i> , and lay cap to the shop roof, .....	0	2	0
<i>Ponsur</i> . Two round sticks attached to the <i>ruchee</i> and suspended in the pit, .....	0	0	2
Two wooden treadles, ... ..	0	0	2
<i>Duna</i> . Horizontal beam or yard roll on which the ends of the warp are wound, .....	0	0	1
Post to which the yard roll is fastened by a rope, .....	0	0	4
Rope of date leaves, .....	0	0	6
<i>Nar</i> or shuttle of <i>taree</i> wood, the only part of the machine that is formed neatly, .....	0	8	0
Iron reel or needle, .....	0	0	$\frac{1}{2}$
<i>Sipee</i> . A thin plate of blunt iron $2\frac{1}{2}$ inches long and $1\frac{1}{2}$ inches wide for scraping the woof, .....	0	2	0
<i>Buhla</i> . A piece of leather paid with the hand under the woof when it is scraped, .....	0	0	4
Iron pincer to pick off rough threads from the surface of the silk, .....	0	0	2

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Rs. 3 14 0

A weaver earns four anas (six pence) a day, and will finish a piece of silk 24 yards long and 11 inches wide in a month. The manufacturer's profit is from 3 to 5 rupees.

A piece of *Duryaee* 24 yards long and 11 inches wide manufactured of *Shalbafee* or *Nuwabee* silk from Toorkistan, costs :—

Orange colour 12 rupees or 8 annas a yard.

Blue 11 do. or 7 do. do.

Yellow and green 10 do. or 6 do. do.

Raw undyed silk thread imported from Persia and Toorkistan sells in the bazar at 16 or 17 rupees the seer, and  $\frac{1}{2}$  or  $\frac{3}{4}$  of a seer are required to weave a piece 96 yards long and 11 inches wide. The import duty on undyed silk thread is 1 rupee per seer and  $1\frac{1}{4}$  ana extra on thread dyed at Shikarpoor or elsewhere in Sind.

The dyer's charges are :—

For reddish-brown or orange colour, formed by safflower (the dried flowers of the *Carthamus Tinctorius*),  $2\frac{1}{2}$  seers per rupee.

For blue, formed by Indigo, 1 seer per  $2\frac{1}{2}$  rupees.

For green, formed by Indigo with gooljuleel (mettilel,) 3 seers per rupee

For yellow, formed by gooljuleel, 3 seers per rupee.

They are the only colours used in Roree by silk-dyers, and the weavers are ignorant how to produce any pattern or design.

When the weaver receives thread from the dyer he smears ghee over it to give it strength and flexibility, and applies wheat starch occasionally to the woof with the point of a stick enveloped in cotton rag.

As far as I could ascertain there are 160 silk looms in Roree which pay a yearly tax of 900 rupees, which is 200 rupees less than the sum realized in the time of the late Meer Sohrab. I visited several loom-shops and found them all in a state of wretchedness and discomfort. The shop from which the description is taken, measured eight feet in length and twelve feet in width, and cost ten Shorabee rupees; it had a pent roof of reeds, mats, and date leaves in bad repair; the ends rested on square pillars of sun baked bricks and the middle on posts, and a low door was built in a wall of tamarisk boughs kept together with posts set on end and sticks tied across them. It was no protection from thieves. Work-shops are not, however, built with a view to secure property, and tradesmen and mechanics rarely sleep in them; they return home at night and carry with them any articles and machinery likely to tempt the cupidity of a thief.

Cotton weavers have a loom of the same description as silk weavers, and worth 3 rupees:

	Rs.	A.	P.
The spinning wheel, .....	1	0	0
The hand wheel, .....	0	0	3
(This is worked by a female whose hire is included in her husband's wages of two anas (3d. a day), .....			
30 lease rods of Surkunda reed cut in the wilds, .....	1	0	3
The pit in which the weaver sits dug by the weavers.			
The cloth-beam or breast-roll $4\frac{1}{2}$ feet in length, .....	0	8	$\frac{1}{2}$
Two posts in which the cloth beam revolves, .....	0	0	2
The lay cap 3 feet long, .....	0	8	0
<i>Dootna</i> and <i>Sundulee</i> , part of the heddles, .....	0	0	4
Two <i>Ruchee</i> part of the heddles, .....	0	6	0
The 'Reed,' of split Surkunda reeds, .....	0	0	3
Two <i>Ponsur</i> , .....	0	0	2
Two treadles, .....	0	0	2
<i>Duna</i> , or horizontal beam, .....	0	0	1
Goats' hair rope to which the end of the warp is fastened, ..	0	0	5
Shuttle of <i>kundee</i> wood, and iron reel or needle, .....	0	4	$\frac{1}{2}$
Cotton threads and horizontal sticks firming the heddle or harness for suspending the loom to the shop-roof, made in the shop.			

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 Rs. 3 2 0

In 1839, coarse cotton thread fetched in the Roree market from four to sixteen anas a seer, and fine thread four rupees a seer. A weaver works a piece of cloth 12 yards long and  $\frac{1}{2}$  a yard wide in a day,  $\frac{1}{4}$  seer of thread is sufficient for a piece this size which sells for  $1\frac{1}{4}$  rupee. A piece of coarser texture which consumes a seer of thread sells at  $\frac{3}{4}$  rupee. A weaver in Roree earns 2 anas (3 pence) a day, which is a half-penny more than is paid in the best cotton factories at Boulac (Cairo). The master's labour is calculated to be worth double, and he prepares the most difficult part of the work.

The shop I visited held two looms and a female spinner. It measured 15 feet long and 9 feet wide and cost 5 rupees, three of which went for labour; two sides of it were fenced with tamarisk twigs unplastered and kept together with sticks laid across them; the third side was open, and the fourth joined a mud wall of another house: the shop had a low wooden door and a broken roof of mats and reeds propped on posts, and this is a fair description of by far the greatest number of shops belonging to mechanics and artizans in Roree.

Cotton cloths were among the few articles which became cheaper at Roree after the arrival of the British. This was owing to the large quantity imported by merchants from the Punjab and Bhawalpoor: they took advantage of the diminution of duties and increased facilities of navigating the Indus.

The process of printing and dyeing calico is usually conducted by one person, and the proprietor of the shop I am to describe, had no assistants, and performed the whole work himself. Working dyers receive 2 anas a day, and food morning and evening, consisting each time of half a seer of wheat flour. The dyer had a walled court ten yards long and six yards wide which enclosed two sheds. The one he occupied himself measured twelve feet in length and ten in width, and he let the other to a cotton spinner.

To prepare cloth for the print and dye, it is immersed four hours in an earthen pan of alum and water mixed in the proportion of 1 to 16, and care must be taken if it be intended to give the piece a uniform tinge from the dye, that this substance, technically called mordant, is universally applied over the whole—otherwise it is applied only in parts; it is then withdrawn from the alum mordant, drained, and washed. A piece of cloth, 24 cubits long and 1 cubit wide, requires an *ana's*\* weight of alum and five seers water. The dyer afterwards grinds some tamarisk flowers (*sak oor*)

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\* An *ana* is a Sind weight equal to 6 Shorabee rupees.

in a common stone hand mill and mixes one part flour with sixteen of water. Cloth impregnated with this fluid acquires a yellowish hue, and the immersion is repeated before it is consigned to the colouring vat.

Black spots are left on a white ground of cloth by applying to these points a paste, composed of acetate of iron, gum (*cheer*), and fuller's earth. The dyer forms the acetate from old nails or any rusty iron which he throws into an earthen pot with wheat starch and water, in the proportion of one of iron, two of water, and one fifth wheat starch, and exposes it in the sun four days in summer, and eight in winter as the iron is then longer dissolving. The stuff is transferred to another vessel and fullers' earth melted with it in no fixed proportion until it becomes a thick paste, and to every five seers he adds an *ana's*\* weight of gum.

The dyer pours the stuff into a shallow box of baked clay, glazed inside and out, and measuring eight inches square and three inches deep. A frame five inches square formed of twelve small bars of *sirkee* reed, bound together at the ends by transverse wooden bars and twine, is set on the paste, and over it a piece of coarse wool on which the dyer presses the block to avoid taking a superabundance of the stuff which would happen if he plunged the block directly into it. The dyer had twenty blocks or engravings in relief, of different designs, made at Shikarpore of tamarisk and tamarind wood, and measuring four and five inches each way. The stuff which accumulates from time to time in the engravings, is removed at intervals by small brushes made of boar's bristles.

Madder (*munjeeth*) is the dye stuff used for producing red colour, and the best kind sells at  $2\frac{1}{2}$  seers per rupee; it is not a product of Khypoor and imported from Khorasan and India, and through the sea port of Korachee. The stuff is obtained by boiling one part madder in thirty parts water in a copper vessel, till the colour is thoroughly extracted from the root, which takes about four hours. The root is then withdrawn from the pot and thrown away. Eight pieces of cloth each 24 cubits long and 1 cubit wide, are sometimes dyed at once, and boiled two hours in four seers of madder. The cloth is taken from the colouring bath to a river, and beaten on a plank cut in furrows, like the one used by washermen, to deprive it of superficial colouring matter. It is rubbed an hour with cowdung and left all night to dry, and in the morning washed again in the river in the manner noticed, and spread in the sun to dry. The dyer renders the colouring matter a more decided red by mixing *khar* (alkali, with water,) and sprinkles it upon the

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\* An *ana* is a Sind weight equal to 6 Shorabee rupees.

cloth. Two ana's weight of alkali are sufficient to moisten a piece of cloth 24 cubits long. He washes the cloth a third time in the river, carries it home, and, after folding it, beats it into a smooth even surface with a wooden roller which terminates the process. Four days are required to print and dye a piece of cloth 24 cubits long and 1 cubit wide of any pattern. Fine calico absorbs a larger quantity of fluid than a coarse kind. The man charges one rupee for printing and dyeing a piece this size of the best pattern, and half the money for an inferior pattern. In both instances the charge for printing amounts to one fourth of the whole sum. The man does not use any other colour than madder, and he was the only dyer in Roree in 1839. The dyers of green and yellow cloths had fled to Khyrpoor to escape the exactions of the Governor, and the dyer of blue cloths had removed his shop for the same reason to the British camp.

The Roree cotton printer had :—

	Rs.	As.
Ten wooden blocks ( <i>chemba</i> ) 4 inches long and $2\frac{1}{2}$ inches which cost 5 anas each, .....	2	2
Ten wooden blocks 4 inches square at 4 anas each, .....	8	3
Two small brushes of hog's bristles for cleaning the blocks, .....	0	5
Two boxes ( <i>dubkee</i> ) of baked clay, 2 anas each, .....	0	4
Bench $4\frac{1}{2}$ feet long and 2 feet wide raised on legs to hold the cloth for printing, .....	1	0
Mat of date leaves, .....	0	1
Large earthen pan, .....	0	8
Three earthen pots, .....	0	3
	<hr/> Rs. 7 15 <hr/>	

The price of ingredients he requires to carry on his business is stated below :—

	Rs.	As.	Ps.
Madder root $2\frac{3}{4}$ seers, .....	1	0	0
Tamarisk flowers ( <i>sakoor</i> ) brought from the wilds per seer, .....	0	0	8
Gum ( <i>cheer</i> ) per seer, .....	0	8	0
Alkali ( <i>khar</i> ) per seer, .....	0	0	1
Alum per seer, .....	0	6	0

The road duties, and *octroi* or barrier duties, levied on four-footed animals is ruinously high, and of course affects their hire. For instance between Roree and Kyrpoor, a horseman pays :—

	<i>Pys.</i>
At the gate of Roree, .....	2
Half way, .....	$\frac{1}{2}$
At the gate of Kyrpoor, .....	2
	<hr/>
	4 $\frac{1}{2}$
	<hr/>

The distance between these places is only 8 kos.

Between Roree and Shikarpore, 16 kos, he pays:—

	<i>Pys.</i>
At Roree, ..	2
Indus ferry, ..	3
At Sukhur, ..	9
Village of Driha 4 kos from Sukhur, ..	4
Barrier of Shikarpore, ..	5
	<hr/>
	23
	<hr/>

or nearly one shilling English. These heavy charges are the consequence of Roree, Sukhur, and Shikarpore being under separate Governors.

Hire of cattle from Roree to Shikarpore, and Khyrpoor.

	<i>Rs. As.</i>	<i>Rs. As.</i>
Of a Camel, .....	1 4	1 0
Of a Horse or Pony, ... ..	0 12 or 16	0 8 or 9
Of a Mule, .....	0 10	0 8
Of an Ass, .....	0 7	0 5

Hindoo merchants and Bankers exact 24, and sometimes 36 per cent. for money borrowed by zumeendars and persons in needy circumstances, and collect it monthly. But in money transactions with each other they only take 6 per cent. No moosulman practices usury.

Ferries are little frequented except on the line of commercial intercourse, and the roads leading directly to large towns: in other situations they do not give regular employ to the boatmen. Flying bridges of a single rope fixed to stakes on the banks, are thrown across canals and streams cut from the Indus, and a man pulls the passenger across in a boat. The charge for crossing the Indus is, one pys a head for foot passengers double for an ass, and quadruple for a cow or buffaloe, and on small rivers like the Anul and Nuhra, half these respective amounts.

Boats proceeding up and down the Indus before the treaty of 1839, which established the free navigation of the river, paid a toll of one rupee

at Bukur without reference to their tonnage, and tolls at Kurdehee and Thatta. They were searched at Hyderabad, Sehwan, Chilka on the Arrut, Khypoor on the Nuhra, and at Roree. An attempt to conceal goods not entered in the bill of lading, condemned the cargo to confiscation and the owner to fine and imprisonment. He must exhibit the merchant's accounts of whom he purchased the goods and a certificate of the custom house officer of the place where they were embarked, without which they are stopped. Grain landed at Roree is charged about  $4\frac{1}{2}$  per cent. duty regulated by the price current of the town.

The natives of Sind, with the exception of a few high caste Hindoos who abstain from fish, subsist on fish, milk, and wheat or *joowara*, or rice where it is cultivated, and a variety of vegetables which grow in plenty. From motives of economy they eat wheat during the *rubbee* or spring harvest and *Joowara* or maize in the *Khureef* or autumnal harvest. The price of rice has risen considerably since 1838, and is now beyond the means of the lower orders except in districts where it is the staple. Rice is the red kind and people clean it by pounding it in large wooden mortars with salt in the proportion of one part salt to six of rice. It is sifted from the salt and something less than a pound of wheat flour added to bleach it. Every boat on the Indus is provided with a deep wooden mortar formed of the hollow trunk of a tree. The boatmen buy grain in the husk because it is cheap and beat it in the mortar with a club to separate the chaff.

Meer Roostum obliged the milkmen of Roree to dispose of milk at  $2\frac{1}{2}$  pys a seer, but on their threatening to go over to our camp, allowed them to sell it at 3 pys. At Sukhur the price formerly was 2 pys a seer, and doubled in 1839. Curds (*Duhee*) continued at the old rate of 2 pys. Ox and Cow beef sold formerly at 2 pys a seer in Roree, and latterly at  $2\frac{1}{2}$ , and goat's flesh rose from 5 to 6 pys. The beef and mutton killed in camp for the troops, was extremely lean and tough, and hardly eatable, when cooked in a common way, nor was this surprising as the Sind butchers feed their sheep and cattle on the refuse of stables, and do not give them grain and very rarely Kurbee (the stalk of *joowara* and *bujra*.)

Labourers and other poor people, eat twice a day, in the morning and evening, and consume  $\frac{3}{4}$  of a seer of wheat or *joowara* flour, and one pys worth of *bor*, a condiment made of fish, spinach, or pulse. To prepare *bor* the fish is cut in pieces and thrown into boiling water, and onions, black pepper, coriander seed, turmeric, and pomegranate seeds, are added as seasoning. At present (1839)  $\frac{3}{4}$  of a seer of wheat or *joowara* flour costs

3 pys, so that including the price of *bor*, a poor man consumes two pence a day. Labourers earned high wages in our camp and could afford to purchase comforts, but they had been so little accustomed to possess cash beyond their daily and pressing wants that they spent the surplus improvidently. After working a few days they absented themselves, without leave, for a week, and squandered their earnings on hemp juice and tobacco. They returned to ask their employer's forgiveness and to resume their labours, but followed again the same improvident course when they amassed a little money.

The food of a Moosulman of the better class costs about a rupee a day, and consists of :

	<i>Pys.</i>
1 lb. Rice, .....	3
1 lb. Wheat Flour, .....	$2\frac{1}{2}$
1 lb. Goat's Flesh, .....	4
1 lb. Ghee or Clarified Butter, .....	8
2 lb. Butter Milk, .....	4
$\frac{1}{4}$ lb. Butasha, .....	4
	<hr/> 25 $\frac{1}{2}$

The family eat half about sunrise and the other half at noon, and a third meal, consisting of the same quantity, at the first watch of the night. A Zumeendar of Sukhur of my acquaintance, spends  $\frac{3}{4}$  of a rupee a day on food, and his servants eat what is left. Hindoos live more frugally.

Poor people eat with their food a large quantity of chillies which they pound in a mortar with an equal quantity of coarse salt, and add some oil to diminish their fiery taste. Three pys weight of whole chillies are sold for a copper pys, and half the quantity pounded for use. Fish is dressed with linseed oil and a variety of spices, and the lower orders grill the entrails on wood ashes and eat them with salt.

There is little in Sindian cookery to tempt an epicure who has tasted the delicacies of a Parisien *restaurateur*, or the royal kitchens of Dilhee and Lucknow. I shall give the reader an idea of their cookery by describing a banquet at Sukhur in 1839 to which about two hundred guests were invited. Sher Moohummud, a great *savant* of Roree, gave the dinner to the principal tax gatherer of Khyrpoor, who sent a *nuzzur*, exceeding the expense of the entertainment, which cost about eighty or ninety rupees. He and she goats were cut in pieces and stewed to rags in large copper cauldrons; and salt, garlic, turmeric, blackpepper, cocoanuts, onions, and the seeds of black cummin, coriander, and anise

were pounded and mixed with the meat and some ghee added after it was removed from the fire.

Another dish consisted of rice served in the water in which it was boiled, and seasoned with salt, ghee, and lime juice.

A third dish, called I think *Ruhta*, was made of white pumpkin cut in small slices, parboiled, and thrown into about eighty pounds of *duhee* or coagulated milk, and served with cayenne pepper, salt, onions, and garlic. Every one was helped to a small cup of *ruhta*. The rice was thrown into large earthen platters each capacious enough to allow eight or nine persons to sit round it, and the meat was heaped on the rice and a little *ruhta* poured over it. The Company dined in the open air and were much scattered. Some sat on mats and blankets they brought with them, and the greatest number on the bare earth. It would have been pronounced a shabby banquet in India. According to a Sindian custom, each groupe before they drew to the platters, looked cautiously round, to ascertain if an enemy not bidden to the feast, was watching them. They devoured the meat in unseemly haste and it was over in about an hour.

The Belooch, Puthans, Moghuls, and other northern tribes, settled in Sind, are tall and well made, and the upper classes have dark brilliant eyes and expressive features. They as much surpass the inhabitants of Oude and the Delhi Territory in bulk and stature, as the latter do the tribes of Bombay, Bengal and the Konkan. In complexion, they are fairer than the Bengalees but less so than the Moosulmans of Northern India. They let their beards grow to a great length regarding a well covered chin as a handsome and becoming ornament of the face. Asiatic monarchs, like the early French Kings (the Franks,) never allow the scissors to touch their beards, and regard the beard as a mark of freedom and illustrious birth, and cultivate and prize it exceedingly. The Belooch also permit the hair of their heads to grow in wild profusion which I need not observe, is expressly prohibited by the Koran, for a Moosulman is enjoined to leave only a small tuft of hair on the crown of the head to afford Moohummud a hold in lifting him to Paradise.

The beards of the Belooch, like those of other Asiatic faces, are mostly black and the practice of staining them as they turn grey, is almost universal. An extract from the leaves of *hina* (lawsonia inermis) and indigo are used for the purpose, and if not renewed at proper intervals, changes the beard of a fiery red or deep orange colour. It is much the custom, among the Persians and Afghans, and they assist the operation by the vapour bath.

*Hina* leaves are ground in a mortar or stone hand-mills and immersed an hour in warm water until they acquire the consistency of thin paste. Women mix it with the paste and apply it to their ringlets to conceal the ravage which time has made with them, and it gives their hair a disagreeable smell.

The *hina* paste is strained and applied to the beard with paper and cotton cloth which are passed under the chin and over the head, and a warm situation, particularly a hot bath, favours this troublesome operation. It is left on four or five hours to produce a good colour. Afterwards the beard is thoroughly washed with warm water, combed clean and dried, and covered with a decoction of indigo leaves made into paste like *hina* and tied on the beard for double the period. It is generally put on at night and washed off in the morning, and the beard combed and cleaned. The dye should be applied once a week, to procure the colour, but is not usually renewed oftener than the tenth day.

The national head-dress is a circular cap called Shuhzadpooree. It is about eight inches in height and made of silk or cotton thread of several colours according to the prevailing fashion and taste of the wearer. Scarlet was the favourite colour at Hydurabad in 1839. The crown is flat with a sharp projecting rim, and of a different colour from the rest of the cap, and sometimes covered with brocade. A gay coloured band, the depth of the cap, goes round it with the exception of two inches in the front which is of another pattern. Caps are made upon very small blocks, and worn on the brows so that they just cover the crown of the head. They cost from six annas to five rupees, and common people wear one, three months, or until the threads fall in pieces, and are discoloured from dirt and grease.

Many Puthans, Moghuls and other foreigners, who have settled in Sind, adopt the Belooch cap, and dress to identify themselves with the conquerors of the country and to procure respect and security from oppression, and even Hindoos, in Government employ, wear it. The Ameer occasionally presents his servants with a cap or a dress, and they could not neglect his gifts without giving offence.

Suyads sometimes wear a three-cornered cap made of rich crimson silk sprigged with flowers, or covered with gold brocade, and a handsome one may be purchased at Shatta for 4 or 5 rupees. They are stiffened with paste or buckram and fold up like an English cocked hat.

A few Belooch have adopted the turban, but they usually prefer the national cap. Poor Sindees have cotton turbans either white or dyed

blue with indigo. They take from six to twenty yards of cloth about sixteen inches wide, and cost from 6 annas to 2 rupees.

Slippers are of brown leather made of a peculiar form, and the soles stitched together with cotton thread. They cost half a rupee per pair, and an inferior kind six and seven annas. Poor tradesmen and manufacturers change their shoes every six months and sometimes twelve months.

The upper garment (*cholo*) of the Sindees, is a loose shirt of white cotton similar to the smock of an English ploughman : it has a low collar fastened over the right breast and reaches below the knee, and takes six or eight yards of cloth. The pastoral tribes of the desert and poor farmers, usually dye the frock blue, and other classes a sort of yellowish brown colour with extract of turmeric and pomegranate shells. Some wear a loose waistcoat with a cotton sheet (*bochun*) twisted over it, containing from six to twenty yards of cloth according to the means, and taste of the wearer.

Their trousers or drawers are of course cotton stuff usually dyed blue, made very full, low in the seat, and rather tight above the instep. Some reach only to the small of the leg and are fastened at the loins with a running string. Tradesmen and manufacturers allow themselves four or six suits of clothes in the year.

The higher ranks wear round the waist a *loongee* made at Thatta of mixed silk and cotton threads of gay colours. The middle ranks have *loongees* of white cotton with blue cross bars six or seven cubits long with a border of crimson silk and cotton mixed, and the poor gird their loins with a bit of coarse cotton cloth.

Some women of the lower class wear drawers (*Sootun*), but ladies who are behind the curtain and do not quit their chamber, wear petticoats confined at the waist with a string. Cotton drawers are sometimes striped red, made full to the knee, and tight below it, leaving an opening scarcely wide enough to admit the foot, and falling under the heels.

Their body is cased in a sort of spencer or boddice with short tight sleeves : it reaches to the waist and is tied above and below the bosom with strings, leaving the back exposed. The spencer is dyed brown, red, or dark blue, and sometimes prettily worked and spotted with coloured silks and covered with talc spangles fixed on their leaden medallion, which are also used to decorate mantles and petticoats. They are put on with gum and other adhesive substances.

The following list exhibits the wearing apparel and its cost, of a landholder of the middle class, and of Government officers, in Khyrpoor.

Rs. As. Pys.

<i>Cholo</i> or Shirt of coarse cotton called 'Udhotur' of Khypoor manufacture, 20 cubits, at 28 cubits per rupee . .	0	113	0
<i>Bochun</i> or mantle of the same material 28 cubits long . .	1	0	0
<i>Sootun</i> or Drawers 11 cubits at 9 cubits per rupee . .	1	3½	0
<i>Loongee</i> of striped cotton . . . . .	2	8	0
Shahzadpooree cap of yellow silk and crown of red cotton. .	1	0	0
Pair of Shoes . . . . .	0	8	0

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Rs. 6 15¼ 0

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The three first articles on the list are sewn at home, and the usual allowance is six suits in a year which cost . .	17	11½	0
Six Caps . . . . .	6	0	0
Four pair of Shoes . . . . .	2	0	0

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Total cost of a dress annually about £ 2-11. Rs. 25 11½ 0

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About 4s. 6d. are sufficient to provide a poor person such as stone-cutters, silk and cotton weavers, washermen, leather cutters &c., with a suit of wearing apparel, and women of this class may be clothed for 4 or 5 shillings.

A man requires :—

A cotton <i>chola</i> 12 cubits 6 annas, sewing 1½ anna . .	0	7½	0
A cotton <i>Bochun</i> 18 cubits 9 annas, sewing 1 anna . .	0	10	0
Drawers, of cotton cloth 10 cubits long 1¼ cubit wide 5 annas, sewing 1 anna . . . . .	0	6	0
Cap 6 annas; or cotton turban 12 cubits long, the same value . . . . .	0	6	0
Shoes 7 annas per pair . . . . .	0	7	0

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Rs. 2 4½ 0

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<i>Chola</i> 4 per annum, at annas 7½ each . . . . .	1	14	0
<i>Bochun</i> 4 per annum, at annas 10 each . . . . .	2	8	0
Drawers 4 per annum, at annas 6 each . . . . .	1	8	0
Cap 4 per annum, at annas 6 each . . . . .	1	8	0
Shoes 2 pair per annum at annas 7 each . . . . .	0	14	0

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About 16s. 6d. per annum, Rs. 8 4 0

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A woman requires :— Rs. As. Pys.

A cotton petticoat (puro), 24 cubits golong and 2 cubits wide

1 rupee, sewing 2 pys. . . . 1 0 0 Four per annum 4 3 2

A Boddice (*Choolee*) of cotton cloth 4 cubits long and  $1\frac{1}{4}$  cubit wide, 2 annas, sewing 2 as.

0 4 0 ditto 1 0 0

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1 4 2

A mantle or sheet (*Chuddur*)

20 cubits long. It is thrown over the head, envelopes the figure, and descends to the heels, cost 12 annas, sewing 1

anna . . . . . 0 13 0 Four per annum. 3 4 0

Shoes 7 annas per pair . . . 0 7 0 Two per annum. 0 14 0

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2 8 2

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9 5 2

Drawers take about 9 cubits of cotton cloth,  $1\frac{1}{4}$  cubit wide and cost 8 annas and 1 anna sewing . . . . .

0 9 0 Four per annum. 2 4 0

Clothes are generally made by the females of a family. Women sometimes wind a cloth or mantle round the body and veil their features like Indian women.

The Ameer's dress costs about £ 7 10, and he is said to allow himself four suits a month. The cast off suits he gives to his servants . . . . .

A Chola costs . . . . . 3 0 0

Drawers . . . . . 10 0 0

Loongee . . . . . 50 0 0

Roomal or Handkerchief . 1 0 0

Cap . . . . . 10 0 0

Shoes . . . . . 1 0 0

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Rs. 75 0 0

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The dress of ladies of the Ameer's Haram costs about the same, and they wear also a silk *Uorungshahee* of Persian or Toorkish manufacture, worth 30 or 40 rupees. The best *Uorungshahee* are usually red and studded with emeralds, pearls, and other precious stones arranged in patterns. There are some in the Palace valued at 2,000 rupees, and Meers Roostum and Ali Morad have each one said to be worth 5,000 or 6,000 rupees.

So strong is the women's passion for jewels and ornaments, that even the poorest lay by a trifle out of their scanty earnings to gratify it, and I recollect seeing a female at work in a field at Sukkur covered with filthy rags, who had ornaments on her person worth twenty rupees. A triple amulet of silver round her neck cost alone six rupees.

The gold and silver ornaments worn in Khyrpoor and Moghulee, are more remarkable for their weight and number than delicacy of finish.

The *Chotee Phool* is a medallion for the back of the head.

*Tiko*. A large oval forehead ornament of gold or silver, painted three or four colours usually red, green, and yellow. A similar ornament is worn in India by shop-keepers wives and prostitutes, but not by peasants. The peasant women of Sind wear the *tiko* at feasts and holidays, and fix it on the middle of the forehead by gold or silver chains (*daonree*), which are brought across the forehead and fastened with hooks behind the ears, or to the crown of the head. A gold *tiko* cost 32 rupees and a silver one  $1\frac{1}{4}$  rupee.

*Punra* from seven to sixteen ornaments worn in the rim of the ear with pearls or silver beads.

*Nusbee* worn near the orifice of each ear.

*Joomuk* suspended before the ear to cover the orifice.

*Chupla* gold or silver wires set with about a hundred small turquoise stones worn in the middle of the rim of the ear.

*Boolu* a small ringset with pearls worn through the cartilage that divides the nostrils.

*Nut* ring generally set with three pearls worn in the right nostril. It is always gold, and the lowest half swells into a crescent form. The gold costs from 5 to 9 rupees. A poor woman will have a nose ring worth ten rupees of which the gold costs five and a pair of pearls five. Country people have a cumbrous description of nose ornament resembling in shape and size the two handed instrument used in India to cut betel nut.

*Kundhee* necklace of gold or silver beads strung on silk threads and falling below the bosom and fastened to an angular barrel-shaped ornament (*poollo*.)

*Taweez*, three square amulets of gold or silver, sometimes coloured green or red, suspended round the neck by silk threads.

*Sookree*, an oval ornament suspended round the neck and below the bosom.

*Zunjeeree*, a double chain which is passed over the neck and across the loins and attached behind and before to oval medallions, and falls below the bosom.

*Chelkee*, a waist chain.

*Dorhir*, armlet of three barrel shaped ornaments like the *pootlo*, worn below the elbow.

*Banhee*, long bangles of embossed gold or silver, worn from the wrist to the shoulder leaving only a small opening at the elbow joint, so that the arm is in fact cased in metal. Ivory armlets are turned on a lathe and sold by weight, and a sufficient number to reach from the wrist to the shoulder may be purchased for 25 rupees. They have a clumsy and disagreeable effect on the sable skins of the women.

*Moree*, pointed bangle of gold or silver fastened with silk threads on the wrist.

*Wadolu*, *Mungloo*, and *Kungur*, three kinds of bangle for the wrist.

*Moondree*, seal rings worn on the fingers. A chain (*wung*) is attached to the ring on the middle finger, carried round the thumb and fastened to the bracelet.

*Wehr*, ring worn on the fore finger of the right hand.

*Aenu*, Mirror ring worn on the thumb.

*Kuriyon*, heavy silver anklets each weighing from 40 to 100 rupees.

*Ghinguroon*, anklet worn below the *Kuriyon* and fastened with an ornament (*noora*.)

*Paenzeneb*, silver anklet worn below the *ghinguroon*.

*Ungoothee*, angular medallions fastened on the toes by rings and sometimes ornamented with blue enamel.

Men of the middle class wear a gold or silver finger ring with a white or red cornelian or other coloured stone, set in it. If set in gold it costs 8 or 9 rupees and 8 or 9 annas in silver. The stone costs a rupee.

Boys wear a ring (*walee*) through the lobe of the ear; an ornament (*Kewatee*) in the rim of the ear; or *Kungna* or bracelet on the wrist, and sometimes seal rings (*moondree*) on the fingers.

*Proceedings of the Asiatic Society, Wednesday Evening,  
2d June, 1841.*

THE HON'BLE SIR E. RYAN IN THE CHAIR.

Mr. S. G. T. Heatly was proposed a Member by Dr. J. T. Pearson, seconded by the Secretary.

*Books received for the Library of the Asiatic Society, 2d June, 1841,*

Annals and Magazine of Natural History, Nos. 37 to 40, December, 1840 to February, 1841,.....	4
The Calcutta Monthly Journal, for April, 1841, 3d Series, No. 77, .	1
The London, Edinburgh and Dublin Philosophical Magazine, 3d Series, vol. 17, Nos. 112 and 113 and vol. 18 No. 114, London, 1840-41, .....	3
Yarrell's History of British Birds, January 1841, part 22, .....	1
Ouchterlony's Mineralogical Report, Madras, 1841,.....	1
Dollard's General and Medical Topograghy of Kalee Kemaoon and Shore Valley, Calcutta, 1841,.....	1
Cuvier, Histoire Naturelle des Poissons Tome 15, et Planches, Nos. 389 á 420,.....	3
Journal des Savants, Septembre, Oct. et Nov. 1840, .....	3
Tassy, Doctrines et Devoirs de la Religion Musulmane, tires du Coran Paris, 1840.....	120, .. 1
Antiquitates Americanæ, Hafniæ, 1837, (in Danish and Latin,) 4to,..	1
Samlede Afhandlinger of R. K. Rash Kobenhavn, 1838. Fredil del, 8vo. ....	1
List of Mammalia, Contained in the Museum of the East India Company, (for distribution,) .....	
Pamphlets in Chinese Characters, .....	2

Read the Report submitted by the Officiating Curator for the month of May last already published in the body of the Journal.

Read Letter, from Mr. E. Blyth, dated, London, 30th March, 1841, ap-  
prising conclusion of an arrangement for his passage to India per  
'Larkins,' and expressing obligations for conferring upon him the ap-  
pointment of Curator to the museum of the Asiatic Society of Bengal,  
also forwarding abstract of a memoir on the wild sheep.

Read the following correspondence with Professor Wilson.

EAST INDIA HOUSE, 31ST MARCH, 1841,

To

*The Secretary of the Asiatic Society of Bengal.*

SIR,

I have the satisfaction to inform the Asiatic Society, that at last the  
travels of Messrs. Moorcroft and Trebeck have been given to the public.  
The society is no doubt aware that the work was printed, and even  
reviewed three years ago, at which period it was expected by the pub-  
lisher that the map would have been completed. The unaccountable  
and unjustifiable tardiness of Mr. Arrowsmith in the preparation of the  
map has been the sole cause of the delay.

The Society was apprised as soon as Mr. Murray engaged to publish  
the work of the nature of the arrangement, which had been entered into  
with him. It was stipulated that the Society would guarantee him  
against loss in case the book should not meet with a ready sale, either  
by payment of the deficiency or by paying for such copies as they might  
desire to possess. If the book were sold, a certain number of copies  
(40) should be placed at the disposal of the Society. Mr. Murray has  
sold all the copies except the 40 thus reserved. They have been handed  
over to me. A promise was given to Mr. Trebeck, the brother of the  
traveller, that of the copies so received by the society, 12, should be  
made over to him. As he was recently in town the 12 sets have been  
delivered to him. Of the remaining, 10 have been sent to the Society  
on board the Tamerlane. I have distributed six others in the following  
manner :

- 1 To the Royal Society.
- 1 To the Royal Asiatic Society.
- 1 To the Royal Society of Edinburgh.
- 1 To the Asiatic Society of Paris.
- 1 To the University of Bonn.
- 1 To the Royal Geographical Society.

They have been presented in the name of the Society. There thus  
remain 12 copies to the appropriation of which by myself I trust the

Society will not object, as I had much trouble in preparing the book for publication, having been obliged indeed to re-write the whole of it. Of these 12 copies, several will be presented to public Libraries. Of those sent to India, I take the liberty of suggesting that a copy should be sent to the son, and another to the daughter of Mr. Moorcroft. They are both in India. The son is, I believe, in the Madras Army, the daughter is married to an officer in the Bengal army. I am not able to furnish more particular directions as I omitted to ask Mr. Trebeck when I saw him, and I do not know where to apply to him; but it will probably not be difficult to obtain the necessary information in Bengal, from persons connected with the houses of Palmer and Co. and Cruttenden and Co. with whom Mr. Moorcroft was in correspondence.

Mr. Blyth has taken his passage in a ship that is to sail at the end of this month, I am in hopes that the arrival of the mail will bring the Society's approbation of the measure of making him an advance for outfit and passage, as without it, he could not have joined the museum.

I believe I have already acknowledged the receipt of the Bill for £200, for Mr. Prinsep's bust. The charge is 200 guineas or £210, the difference can be remitted hereafter. In the case of my own bust I paid it myself. The Society may do as it pleases about the repayment. Mr. Prinsep's bust has been modelled, and will I hope be as good a likeness as can be expected under the circumstances under which it is made; it will no doubt be worthy of the reputation of the Artist.

I am, &c.

(Signed) H. H. WILSON.

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To

*Professor Wilson.*

SIR,

The Hon'ble the President and Committee of Papers of the Asiatic Society of Bengal desire me, in reply to your letter of 31st March last, to state that they have duly received from Mr. Blyth himself notice of his embarkation for Bengal to assume the office of their Curator. The Local Government have called upon the Society to reimburse the Court of Directors in the sum of £150 advanced to that gentleman. The Society, I am desired to observe, was not consulted before this advance was made, but the local Government have consented that payment shall be deferred until Mr. Blyth arrives.

Notice has been given to our Agents, Allen, Parbury and Co. to pay to your order £10 being the balance due on account of your bust, and we regret that you should have been called on to advance this sum on account of the Society. The Society is happy to say that the funds available for that of Mr. James Prinsep are ample; its members desire me to return you their thanks for the continued interest which you have evinced on this subject.

The Society observes with satisfaction that the travels of Messrs. Moorcroft and Trebeck, ably edited by yourself, have met with so ready a sale. The period of three years however, which elapsed between the printing and publication of the work might, in the opinion of the Society have allowed of a definite reference to it on the subject of the disposal of the 40 Copies to which by the terms of an ample and hazardous guarantee it was entitled. The Society anxious to improve its connections with scientific bodies on the continent of Europe, would have availed itself with readiness of the occasion thus offered, of making presentations on its own immediate account of a work published only by its interposition.

40 Copies of Moorcroft's Travels due to Asiatic Society of Bengal.

12 Given under promise (of the Society ?) to Mr. Trebeck's Brother.

2 Intended for Mr. Trebeck's son and daughter.

6 Presented by Professor Wilson to learned bodies.

12 Taken by Professor Wilson.

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8 For the Asiatic Society of Bengal.

The receipt of the 8 copies sent to the Society will be acknowledged in due course.

I have, &c.

(Signed) H. TORRENS.

*Secy. to the Asiatic Society.*

*Asiatic Society's Rooms,*  
*Calcutta,*  
*The 8th June, 1841.*

The Secretary presented to the Society a valuable collection of coins, consisting of the following :

*List of the Coins ; presented to the Asiatic Society, by H.W. TORRENS, Esq.*

I. Greek and Carthaginian Coins in 5 packets :

- |                                |                                     |
|--------------------------------|-------------------------------------|
| 1. Ptolemy (copper)            | 4. Five coins (copper) of Carthage. |
| 2. Ptolemy (copper)            | 5. Silver coin of Carthage.         |
| 3. Two coins of Melite (Malta) |                                     |

## II. Bad Roman copper coins :

One packet, containing 35 various coins.

## III. Roman Copper coins in 14 packets :

- |                  |                           |
|------------------|---------------------------|
| 1. Minimus.      | 8. Carus.                 |
| 2. Tiberius.     | 9. Maximianus.            |
| 3. Antoninus.    | 10. Licinius.             |
| 4. Faustina.     | 11. Constantinus. M. (11) |
| 5. Lucilla.      | 12. Constantius (6)       |
| 6. Gordianus (2) | 13. Magrentius.           |
| 7. Alexander.    | 14. Decentius-            |

## IV. Copper coins of 12 Rajahs of Cashmere in 12 packets.

- |                   |                    |
|-------------------|--------------------|
| 1. Taga Deva.     | 7. Kalasā Rajah.   |
| 2. Sangrama.      | 8. Sankara Vermma. |
| 3. Sassala.       | 9. Ananta Rajah.   |
| 4. Diddâ Râni.    | 10. Taya Sinha.    |
| 5. Kshéma Gupta.  | 11. Kersha Rajah.  |
| 6. Gopala Vermma. | 12. Sugandhâ Râni. |

## V. Copper coins of some of the Mussulman Kings of Dehli.

1. Three coins, Julal Shah, A.H. 841, (scarce.)
2. Four coins, Naser ood deen Mahmood, I.A.H. 643 to 644.
3. One coin, Noosrut Shah (usurper,) A.H. 790 to 800, (very scarce.)
4. Four coins, Mahomed Tughlaks, A.H. 725 to 752.
5. Four coins, Tughlak, A.H. 721 to 725.
6. Four coins, Kutbood deen Moobârûk, A.H. 717 to 721.
7. Four coins, Feroz 3rd, A.H. 752 to 790.
8. Four coins, Shums ood deen Iltumsh, A.H. 607 to 633.
9. Three coins, Aboobukr, A.H. 791 to 793, (very scarce.)
10. Four coins, Mahomed, A.H. 837 to 850.
11. Four coins, Mahomed Adil, A.H. 960 to 962.
12. Four coins, Islâm Soor, 952 to 960.
13. Four coins Ala ood deen Masâood, A.H. 640 to 643.
14. Four coins, Naser ood deen Mahomed, 2d A.H. 796 to 816.
15. One coin, Sikander Humayun, A.H. 796, (extremely scarce.)
16. Four coins, Bhatool, A.H. 854 to 894.
17. Four coins, Mubârûk, 2d A.H. 824 to 837, (very scarce.)
18. Four coins, Naser ood deen Mahomed, A.H. 793 to 796.
19. Four coins, Ghias ood deen Bulbun, A.H. 664 to 685.
20. Four coins, Moaz ood deen Kai-Kobâd, A.H. 685 to 688.
21. Four coins, Ala ood deen Mahomed. A.H. 695 to 716.

22. Four coins, Shahab ood deen Mahomed bin Sam, A.H. 588 to 602.

23. Four coins, Sheer Shah Soor, A.H. 947 to 952.

24. Four coins, Jelal ood deen Feroz, A.H. 688 to 695.

A beautiful set of casts of coins by V. Tregear Esq. was also presented.

Read the following List of Silver Coins of the Mehomedan Kings of Delhi purchased from Lieut. A. Cunningham by the Society.

*Silver Coins of the Mahummudan Kings of Delhi.*

PUTHANS.

A. H.	A. D.		Size.	Price.		Remarks.
				R.	A. P.	
						Type.
588.	1192.	Shahab ood deen Mahummud, 1	Rupee	10	0 0	Unique & unpublished.
643.	1245.	Naser ood deen Mahmood, . 1	do.	3	0 0	Common.
664.	1265.	Ghias ood deen Bullum, . . 1	do.	5	0 0	Rare.
685.	1286.	Moozood deen, . . . . . 1	do.	7	0 0	Very rare.
688.	1289.	Jelal ood deen Feroz, . . . 1	do.	5	0 0	Rare.
695.	1295.	Alaoodeen Mahummud, . . . 1	do.	2	0 0	Very Common.
717.	1317.	Kutt ood deen Moobaruk, . . 1	do.	7	0 0	Very rare.
		Ditto, . . . . . 1 $\frac{1}{4}$	Rupee	1	0 0	Common.
721.	1321.	Ghias ood deen Tughlak, . . 1 $\frac{1}{2}$	do.	2	0 0	Rare.
						Type.
725.	1324.	Muhummud Tughlak, . . . . 1 1	Rupee	10	0 0	Unique & unpublished.
		Ditto, . . . . . 1 $\frac{1}{4}$	do.	1	0 0	Common.
947.	1540.	Sheer Shah, Farced ood deen, 1	Rupee	2	0 0	Very Common.
952.	1545.	Islam or Suleem Shah, . . . 1	do.	2	0 0	Common.
13 at Rs.				57	0 0	

MOGULS.

963.	1556.	Akber, Roundjul julaleh, . .	Rupee	2	8 0	
		Ditto, Squarejul julaleh, . .	do.	2	8 0	
		Ditto, Char yareh rupee, . .	do.	2	8 0	
1014.	1605.	Ichaugir Square, in beautiful preservation, . . . }	do.	2	8 0	
		Ditto, Round, . . . . .	do.	2	8 0	
1037.	1628.	Shah Jehan, . . . . .	do.	2	8 0	
		Ditto, . . . . .	do.	2	8 0	
1068.	1658.	Murâd Buksh, . . . . .	do.	5	0 0	Extremely scarce.
1068.	1658.	Aurangzeb, . . . . .	do.	2	8 0	
1118.	1707.	Behadur Shah, . . . . .	do.	2	8 0	
1124.	1713.	Jehandar Shah, . . . . .	do.	4	0 0	Very scarce.
1124.	1713.	Feroekhser, . . . . .	do.	2	8 0	
1131.	1719.	Rafi ud darjât, . . . . .	do.	10	0 0	{ Unpublished extremely rare.
1161.	1749.	Ahmed Shah, . . . . .	do.	2	0 0	
1167.	1754.	Alumgir Sain, . . . . .	do.	2	0 0	
1173.	1759.	Shah Jehan Sain, . . . . .	do.	15	0 0	
1173.	1759.	Shah Alum, . . . . .	do.	1	8 0	
1221.	1806.	Akber Sain, . . . . .	do.	1	8 0	

18 Coins, 66 0 0

13 57 0 0

31 123 0 0

N. B.—The Mogul rupees are all in the most perfect preservation, having been selected out of 200 Coins at Delhi, at 2 Rupees each.

The Secretary submitted a sample of the Tooloot paper presented by Mr. John S. Torrens. In forwarding it that Gentleman writes, 'I was reminded of it the other night on hearing the Curator speak of the inconvenience caused by the rapid destruction of the labels, on the various specimens in the Society House. This paper is prepared at Nuddea, where it has long been made use of by the Brahmin's in their writings. It is proof against insects, and I am afraid to say the age of some writings on it, which have been produced before me in a perfect state of preservation. I am also told that moderately sized boxes, lined with it will secure papers deposited in them from the attacks of insects; and from some experiments, I have myself made, I should think the paper would be of much use in libraries by merely pasting a slip of it down the backs of books between the leather, another stitching. In records in public offices, it would doubtless be of use.'

'It may be as well to mention that it is impregnated with Sulphate of Arsenic.'

Dr. H. H. Spry presented on behalf of Mr. R. N. C. Hamilton, Commissioner at Agra, a beautiful specimen of the musk deer of the Himalya.

Mr. Hamilton in sending it, writes, 'I have sent to you a skin of a musk deer, quite perfect, the head is good, but from having been badly packed in the hills beyond Almorah, it is crumpled up. I know not whether it will be acceptable to the museum of the Asiatic Society, but if so, will you present it?'

The Hon'ble H. T. Prinsep Esq. presented several Chinese pictures and books brought round in one of Aga Kurboloi Mahomed's Ships, which had been engaged in going to the northward for cattle for the China expedition.

Read letter of 16th April, 1838, from Mr. C. C. Rafer, Secy. Royal Society of Northern Antiquities, Copenhagen, offering the establishment of a connexion between that institution and the Society of Bengal, and with this view presenting a copy of the 'Antiquities of America before the time of Columbus.'

Ordered that the civility be reciprocated by the presentation of a copy of the Transactions of the Asiatic Society, and that Mr. Rafer be requested to enroll the Society as subscriber to the publication.

Read the following letter from Mr. Acsoma Korosi of 22d May, 1841.

TO H. W. TORRENS, ESQ.

*Secretary to the Asiatic Society of Bengal.*

SIR,—I beg to acknowledge the receipt of your letter dated on the 15th instant, acquainting me with the resolution of the Committee of papers, in answer to my letter to you.

I feel greatly obliged by the Asiatic Society's kindness, generosity and liberality towards me, in having accepted my resignation, in having declined to accept the money, which I most willingly and respectfully offered to repay, and in having permitted me to remain at this place until my departure from Calcutta, granting me in the same time a monthly allowance of 50 rupees for which I return herewith my respectful thanks, and beg to be kindly excused from accepting the offered monthly salary; since I cannot employ the money. Should I be successful on my intended journey to Tibet, to find an opportunity for improving myself in the language and literature of that country, and to procure some interesting works, I shall then take the liberty to apply to the Asiatic Society.

I sincerely declare herewith that, if not hindered by death, I intend to return again to Calcutta, and to acquaint the Society with the result of my peregrination.

I beg to remain with great respect,

Sir,

Your obliged and obedient servant,

A. CSOMA KÔRÔSI.

*As. Society's Rooms,*  
*Calcutta,*  
*22d May, 1841.* }

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This letter having been read, the Hon'ble the President observed that that eminent scholar was not less remarkable for the high and gentlemanly feeling which he had always manifested in his intercourse with the Society than for his great erudition, perseverance and enterprize. The expedition Mr. Csoma now meditated to Lassa would be undertaken wholly on his own resources, its object being the noble and laudable one of furthering the ends of Philological and Historical enquiry. The President trusted that should Mr. Csoma find himself in a position during his expedition into Thibet, to require aid, he would not fail to consider the Asiatic Society of Bengal as gratified by being able to lend their assistance to so esteemed a co-adjutor.

The Asoka stone bearing the Palee Inscription, forwarded by Major Thoresby. The mass of granite bearing the Asoka Inscription, fac-simile and translation of which was published in No. 95 of the Asiatic Journal, was laid in the Society's rooms for the inspection of the meeting, having arrived only four days previously. This the most ancient (B. C. 250) and one of the most valuable of the relics of Indian Antiquity in the possession of the Society, was inspected with extreme interest by all the Members present.

It is in admirable preservation, and the characters are cut with distinctness and elegance. A careful comparison with the published fac-simile shewing that it is perfectly correct. The Society have now by the intervention of that zealous antiquarian Capt. Burt, and the obliging kindness of Major Thoresby, been placed in possession of an *Original Edict of Asoka*. It is the decyphering of the character in which the Edicts of that Monarch are written, and the interesting and important historical results deduced from the interpretation of them, which have so greatly contributed to raise the reputation of the Society among learned bodies in Europe, the credit and the merit of the discovery being wholly due to the late Mr. James Prinsep.

It was suggested that on receipt of the bust of that lamented and distinguished man, the inscription now before the meeting, could not be better placed in the museum of the Society than at the foot of the Pedestal, which is to bear his effigy.

For the presentations and contributions, the thanks of the Society were accorded.

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**For use in Library only**

